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ARIZONA Fish AND Wildlife 2000



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The Bureau of Land Management is responsible for the balanced management of the public lands and resources and their various values so that they are considered in a combination that will best serve the needs of the American people. Management is based upon the principles of multiple use and sustained yield; a combination of uses that take into account the long term needs of future generations for renewable and nonrenewable resources. These resources include recreation, range, timber, minerals, watershed, fish and wildlife, wilderness and natural, scenic, scientific and cultural values.

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Table of Contents

	PAGE
EXECUTIVE SUMMARY _____	1
INTRODUCTION _____	4
SIGNIFICANCE OF PUBLIC LAND FISH AND WILDLIFE RESOURCES IN ARIZONA _____	6
COOPERATION _____	8
CURRENT PROGRAM _____	9
THE STRATEGY _____	12
Wildlife Habitat Management _____	13
Managing for Biological Diversity _____	14
Bighorn Sheep Habitat Management _____	16
Other Big Game Habitat Management _____	19
Upland Game Habitat Management _____	20
Waterfowl Habitat Management _____	21
Raptor Habitat Management _____	22
Nongame Bird Habitat Management _____	23
Wetland/Riparian Habitat Management _____	24
Fisheries Habitat Management _____	25
Native Fish _____	26
Recreational Fisheries _____	27
Special Status Species Management _____	28
Federally Listed Species _____	29
Candidate Species _____	31
State-Listed Species _____	34
Human Resource Management _____	35
Internal Coordination and Support _____	37
External Coordination _____	38
Outreach Programs _____	39
Cooperation With Other Agencies _____	40
Cooperation With Public Land User Groups _____	40

T

Table of CONTENTS (continued)

IMPLEMENTATION	42
REALIZED BENEFITS	43
APPENDIX	44
1 Existing and Proposed Habitat Management Plans in Arizona	
2 Estimated Costs and Units of Accomplishment to Achieve the Biological Diversity Goal and Objectives	
3 Estimated Costs and Units of Accomplishment to Achieve the Bighorn Sheep Goals and Objectives	
4 Estimated Costs and Units of Accomplishment to Achieve the Other Big Game Goal and Objectives	
5 Estimated Costs and Units of Accomplishment to Achieve the Upland Game Goal and Objectives	
6 Estimated Costs and Units of Accomplishment to Achieve the Waterfowl Goal and Objectives	
7 Estimated Costs and Units of Accomplishment to Achieve the Raptor Goal and Objectives	
8 Estimated Costs and Units of Accomplishment to Achieve the Nongame Bird Goal and Objectives	
9 Estimated Costs and Units of Accomplishment to Achieve the Wetland/Riparian Goal and Objectives	
10 Estimated Costs and Units of Accomplishment to Achieve the Native Fish Goal and Objectives	
11 Estimated Costs and Units of Accomplishment to Achieve the Recreational Fisheries Goal and Objectives	
12 Estimated Costs and Units of Accomplishment to Achieve the Federally Listed Species Goal and Objectives Excluding the Mohave Desert Tortoise	
13 Estimated Costs and Units of Accomplishment to Achieve the Objectives for the Federally Listed Mohave Desert Tortoise	
14 Estimated Costs and Units of Accomplishment to Achieve the Candidate Species Goal and Objectives Excluding the Sonoran Desert Tortoise	
15 Estimated Costs and Units of Accomplishment to Achieve the Sonoran Desert Tortoise Objectives	
16 Estimated Costs and Units of Accomplishment to Achieve the State-Listed Species Goal and Objectives	
17 Overall Estimated Costs to Implement <i>Arizona Fish and Wildlife 2000</i> by Component and Initiative	

E

EXECUTIVE SUMMARY

Arizona Fish and Wildlife 2000 is an offspring of the Bureau of Land Management's national Fish and Wildlife Program strategic plan, *Fish and Wildlife 2000, A Plan for the Future*. *Arizona Fish and Wildlife 2000* provides overall guidance for the management of fish and wildlife habitat on more than 14 million acres of public land in Arizona.

Traditional demand for public land resources placed tremendous stress on fish and wildlife habitats, a situation exacerbated by increasing human population growth in the state. Arizona BLM has progressed in developing and maintaining healthy and productive ecological conditions in some areas. However, under present program funding and staff levels, the effort is losing ground. Meeting the goals and objectives outlined in *Arizona Fish and Wildlife 2000* will rectify the existing situation.

Economically, the consumptive and nonconsumptive use of wildlife generates large amounts of revenue. In a recent study, an estimated seven million hours annually were spent by people hunting on Arizona BLM lands. Of this total, 3.3 million hours were spent hunting big game. Deer and elk hunting alone, resulted in an estimated net value of nearly \$13 million.

The same study estimated the value of public land nonconsumptive wildlife use. The net annual value of trips with the primary purpose of observing wildlife ranged between \$6 million and \$9 million. Clearly, just from an



Montezuma quail are the largest of Arizona's quail.
BLM Photo

economic standpoint, the amount spent to implement this plan will result in a continuing positive net return.

Maintaining healthy habitats with the optimum abundance and diversity of wildlife has a high intrinsic value. The American public places great importance on conserving their wildlife heritage for a variety of cultural, scientific, aesthetic and spiritual values. An ecosystem approach to managing habitats has its practical side too. Healthy and diverse habitats provide maximum flexibility in managing other resources on public land.

Management of wildlife habitat on public land administered by Arizona BLM is a joint effort with state wildlife agencies. Arizona BLM maintains cooperative agreements with state wildlife agencies in Arizona, California and New Mexico and works closely with many private groups, individuals, and agencies to

improve the quantity and quality of fisheries and wildlife resources.

Arizona Fish and Wildlife 2000 provides direction and cost estimates for the Fish and Wildlife Program in the state through the year 2000. It addresses both the habitat management and the human resources and coordination aspects of the program. Specific objectives address the needs of overall biodiversity, bighorn sheep, big game, upland game, waterfowl, raptors, wetlands, nongame birds, special status species, recreational and native fisheries.

The projected cost of implementing this plan is over \$162 million. The bulk of this money will be spent for on-the-ground management of wildlife habitats. Lesser amounts are targeted for outreach efforts,



People come from all over the United States to hunt white-winged doves in Arizona. Photo by Pat O'Brien

human resource development, and coordination.

National Covservation Areas

- 1 Gila Box Riparian National Conservation Area
- 2 San Pedro Riparian National Conservation Area

Wilderness Study Areas

- 50 Baker Canyon
- 51 Cactus Plain

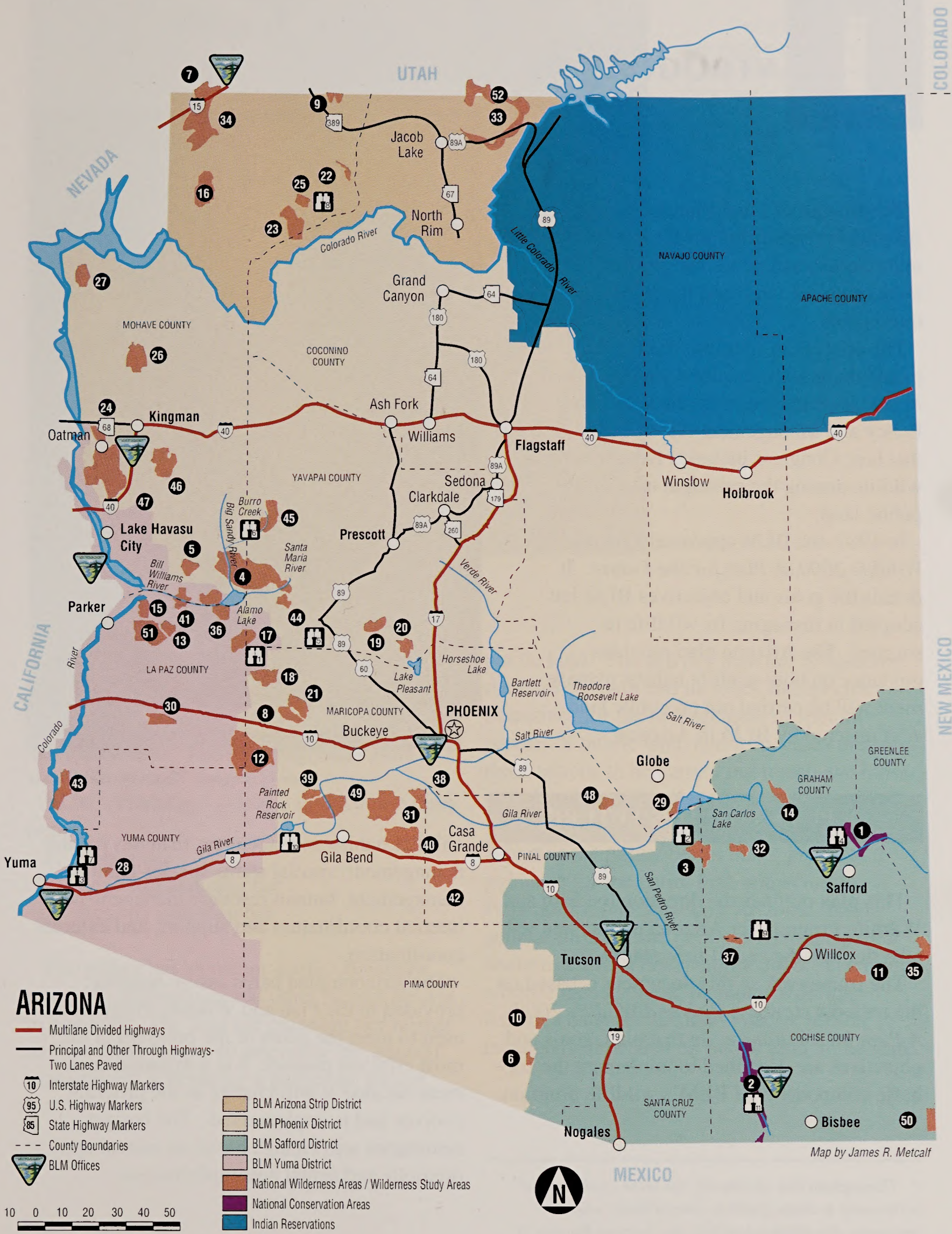
National Wilderness Areas

- | | |
|--------------------------|------------------------------------|
| 3 Aravaipa Canyon | 19 Hassayampa River Canyon |
| 4 Arrastra Mountain | 20 Hells Canyon |
| 5 Aubrey Peak | 21 Hummingbird Springs |
| 6 Baboquivari Peak | 22 Kanab Creek |
| 7 Beaver Dam Mountains | 23 Mount Logan |
| 8 Big Horn Mountains | 24 Mount Nutt |
| 9 Cottonwood Point | 25 Mount Trumbull |
| 10 Coyote Mountains | 26 Mount Tipton |
| 11 Dos Cabezas Mountains | 27 Mount Wilson |
| 12 Eagletail Mountains | 28 Muggins Mountains |
| 13 East Cactus Plain | 29 Needle s Eye |
| 14 Fishhooks | 30 New Water Mountains |
| 15 Gibraltar Mountain | 31 North Maricopa Mountains |
| 16 Grand Wash Cliffs | 32 North Santa Teresa |
| 17 Harcuvar Mountains | 33 Paria Canyon - Vermilion Cliffs |
| 18 Harquahala Mountains | 34 Paiute Wilderness |

ARIZONA MAP LEGEND

Watchable Wildlife Areas

- 1 Alamo Lake
- 2 Aravaipa Canyon
- 3 Betty's Kitchen
- 4 Bonita Creek
- 5 Burro Creek
- 6 Hassayampa River
- 7 Mitty Lake
- 8 Mount Trumbull
- 9 Muleshoe Ranch
- 10 Painted Rock
- 11 San Pedro River



INTRODUCTION

The Bureau of Land Management in Arizona is responsible for the multiple-use and sustained yield management of public land* and the resources on those lands.

The concept of multiple-use management, along with sustained yield, is based in law as contained in the Federal Land Policy and Management Act of 1976. In that law, Congress included fisheries and wildlife among the principal uses of the public land.

In 1987, the BLM approved *Fish and Wildlife 2000, A Plan for the Future*. It details the goals and objectives BLM has adopted in managing its wildlife resources. The Arizona plan provides guidance on how wildlife habitat management will be carried out on public land administered by BLM in Arizona.

A PLAN FOR THE FUTURE

This plan outlines the direction the Fish and Wildlife Program for Arizona public land will take through the end of the century.

The framework of this document is based on the national strategy, *Fish and Wildlife 2000: A Plan for the Future*. In that plan, goals and objectives are described to implement the six basic components of BLM's wildlife program:

* Throughout this document, the term "public land" refers only to those publicly owned lands whose resources are administered by the Arizona Bureau of Land Management.



Although fairly common along the lower Colorado River, snowy egrets are listed as threatened by the state of Arizona. Photo by Bill Grossi

wildlife habitat management, fisheries habitat management, special status species habitat management, human resource management, internal coordination and support, and external coordination.

The Arizona plan helps assure funding provided to the Fish and Wildlife Program is used to meet the goals of the program in the most efficient manner. It is a dynamic document because it will change as the program evolves and is implemented. The budget summaries will change based on annual appropriations and actual accomplishments.



*Coyotes and cactus -
two distinct symbols of the
American Southwest.*
Photo by George Andrejko

RELATIONSHIP TO BLM's PLANNING SYSTEM

BLM's Planning System is divided into three tiers:

1. Policy tier
2. Land use planning tier
3. Activity planning tier

The policy tier identifies goals, objectives, priorities, alternatives and other factors for use in planning. The land use planning tier further defines these factors to determine the general management scheme for a particular area of

public land. The activity plan tier is based on the land use plan and includes site specific objectives for the management of specific parcels of public land, and it specifies management actions to be carried out to achieve those objectives.

Like *Fish and Wildlife 2000*, this document is part of the policy tier in that it provides guidance for the entire Fish and Wildlife Program for public land in Arizona. The general thrust of the policy is from the parent documents, *Fish and Wildlife 2000*. The term wildlife management, includes wildlife, fisheries and special status species habitat management needed on public land in the state.

S

SIGNIFICANCE OF PUBLIC LAND FISH AND
WILDLIFE RESOURCES IN ARIZONA

The Bureau of Land Management in Arizona administers approximately 14.2 million acres of public land. This amounts to about one-fifth of the state's land surface. Of this total, approximately 70,000 acres in California and 100,000 acres in New Mexico are managed by Arizona for administrative reasons.

Arizona public land generally is composed of portions of four major deserts; Chihuahuan, Sonoran, Mojave and Great Basin. A significant acreage of pinyon-juniper and ponderosa pine forest lands are also represented. Included within these broad habitats are relatively small amounts of wetland/riparian habitats. The habitat diversity provides for an even greater diversity of wildlife species.

Arizona public land supports a level of biological diversity that is almost unmatched. Some of the habitats, such as riparian, are extremely important simply because of their relative scarcity in desert environments.

More than 800 vertebrate species are found in Arizona, many of which use the public land at least seasonally. All public land is habitat for one kind of wildlife or another, and usually for several. Important habitats are shown in Table 1.

Public land provides a significant portion of



Birdwatchers from across the United States travel to southeastern Arizona, listed by Audubon magazine as the number one birding location in the country. Photo by Diane Drobka

the habitats for big game animals in Arizona, as shown in Table 2. Significant portions of

Table 1. Major Habitats on public land in Arizona

Habitat	Acres
Big Game	14,113,000
Upland Game	14,126,000
Waterfowl	30,000
Riparian	41,000
Wetlands	12,000
Lakes	1,000
Reservoirs	8,000
Streams	1,400 miles 130 fishable

the state's important game populations are found in those public land habitats. Public land contributes to the recreational harvest of those animals, and thus to the economy of the state.

Table 2. Public land percentage of important big game animal habitats and populations in Arizona (Arizona Game and Fish Department Big Game Strategic Plan, 1986).

*Species	Habitat	Population
Bighorn Sheep	27%	22%
Mule Deer	21%	14%
Antelope	18%	8%
Javelina	21%	12%
Mountain Lion	23%	12%
*White-tailed deer, black bear, elk, bison, and turkey also occur on public land, but the percentage of habitat and population is less than 1 percent.		

According to the Arizona Game and Fish Department (*Wildlife Views*, October, 1988) approximately \$620 million dollars are spent annually on fish and wildlife related activities in Arizona. Over one-half is spent on fishing, but \$170 million dollars are spent on hunting. Another \$124 million dollars are spent in nonconsumptive wildlife use. Expenditures on fish and wildlife related recreation in Arizona increased significantly in the last decade, with

nonconsumptive uses showing the largest increase. The value of these expenditures increases significantly when one considers the "multiplier" effect of money spent on goods and services.

The secondary benefits of fish and wildlife related expenditures easily match or exceed the primary benefits of the dollars spent. Arizona public land contributes to these totals at least in proportion to their occurrence in the state.

Total use of wildlife in Arizona is increasing. Although hunting and fishing license sales vary by year, the number of people utilizing wildlife nonconsumptively is steadily increasing. Recent data indicate 79 percent of the state's population uses wildlife in nonconsumptive ways. In 1989 alone, almost four million recreation visits occurred on public land in Arizona. Wildlife, or just the chance to see it, added considerably to the recreational value of these visits.

There currently are 49 species of animals and plants listed by the U.S. Fish and Wildlife Service as threatened or endangered in Arizona. In addition, 194 species are candidates for such listing. The Arizona Game and Fish Department also maintains a list of species whose existence in the state is threatened to one degree or another. This "Threatened Native Wildlife List" contains a number of species from the federal lists, but also has a number of species that, while perhaps in little trouble over their entire range, are experiencing declines in Arizona. There are over 100 species on this list.

C

OOPERATION

The management of fish and wildlife resources on public land is shared with state wildlife agencies. They are responsible for species management and BLM is responsible for habitat management. In practice, one cannot exist without the other.

Thus, management requires close coordination and cooperation between state wildlife agencies and BLM. Arizona BLM maintains cooperative relations with the wildlife agencies in Arizona, California, and New Mexico, since it manages public land in all three states. One manifestation of this cooperation is the development and implementation of the many habitat management plans in all three states.

These plans, developed under the authority of the Sikes Act, cover most of the public land in the states. Habitat management plans are the means by which the agencies cooperate to implement their respective strategic plans. These include the various five-year strategic plans of the Arizona Game and Fish Department and BLM's various initiative

related strategic plans. Progress in meeting the goals and objectives is measured by coordinated inventory, monitoring and management activities. This assures there is no duplication of effort and the collected data is usable by both agencies. Continued cooperation is assured through the Master Memorandum of Understanding between the two agencies, and by the effective working relationships that have developed at all levels.

BLM and Arizona have developed partnerships with many public and private groups and individuals. These efforts have led to the improvement of habitat and species diversity throughout the state. These people and groups are numerous and include individual livestock permittees, special interest groups, student groups, large corporations and other federal agencies.

BLM assists other agencies, such as the U.S. Fish and Wildlife Service, with fish and wildlife inventories on public lands. Here, Fish and Wildlife Service biologists electroshock fish for an inventory of the San Pedro River. BLM Photo



The Fish and Wildlife Program in Arizona has two primary purposes:

- 1) Provide pertinent data and expertise for land use decision making and management purposes.
- 2) Develop and protect fisheries, wildlife and special status species habitat pursuant to management prescriptions in land use plans and habitat management plans.

The first is accomplished through inventory and monitoring, and the second through habitat management plan preparation and implementation.

Inventory and monitoring are ongoing processes. These include habitat inventories, fish and wildlife population inventories, and ecological site inventories. They require continual updating as issues, conditions and demands change.

Inventory provides data on what habitats and animals exist in a particular area. Monitoring measures and documents the changes to habitats and populations over time in response to management.

Habitat management plan preparation and implementation are also ongoing processes, with plans being revised and updated as scheduled work is completed or priorities and objectives change. Planning typically evaluates inventory and monitoring data, develops



Arizona public land provides habitat for a diverse array of reptiles such as this Mohave rattlesnake. Photo by James Tallon

goals and objectives and prescribes management.

Management commonly used in Arizona includes, construction and maintenance of water developments, habitat manipulation, riparian restoration, land acquisition and exchange, special designations, fencing, fish habitat development, reintroductions, and public outreach. There currently are 26 habitat management plans being implemented in the state. Several are being revised and others scheduled for revision in the near future. Most of these habitat management plans are cooperatively developed with Arizona Game and Fish Department under the authority of the Sikes Act. Appendix 1 lists the status of Habitat Management Plans in Arizona.

The primary responsibility of Arizona's Special Status Species Program is to provide information and input to assure compliance with Section 7 of the Endangered Species Act. Section 7 requires that BLM work to recover listed species and to avoid both jeopardizing the continued existence of listed species and causing adverse modification or destruction of critical habitat.

This is a simplified description of what is a complex program involving inventory, monitoring and management of habitats and, in some cases, species. It also involves the consideration of the needs of numerous species not on the Federal Threatened and Endangered species list, but whose populations may have declined to a point of concern.

The broad objectives of Arizona's fish and wildlife program are as follows:

- Ensure compliance with the statutory requirements of the Endangered Species Act through the Section 7 process and by:



Saguaro cactus substitute for trees in Sonoran desert habitats. This western screech owl is taking advantage of the cooler temperatures inside the cactus. BLM Photo

- 1 • Conducting inventories of Threatened and Endangered species habitat.
 - 2 • Assisting in the preparation and implementation of recovery or other management plans.
 - 3 • Monitoring habitats to ensure that objectives for Threatened and Endangered species conservation are being met.
- Conduct fish, plant and wildlife habitat inventories and monitoring studies to provide data for multiple-use planning, preparation of habitat management plans, and resolution of conflicts involving resource development and protection activities.

- Develop goals and objectives for fish, plant and wildlife habitats in various activity plans. Implement planned actions to meet the goals and objectives.
- Monitor plans or agreements to determine change or trend in regard to habitat development and protection objectives specified in activity plans.

The Fish and Wildlife Program in Arizona has a budget of \$2,657,000 for fiscal year 1992. The wildlife program staff and support personnel accomplishing the work is described in Table 3.

Table 3. Staffing Distribution as of May 1992

	Resource Area Office	District Office	State Office	Total
# of Offices	10	4	1	
Wildlife Position	16	4	2	22
Fisheries Position	1	0	0	1
Botanist Position	1	1	0	2
Other*				21
			Total	46

*Includes positions such as clerical, management oversight, engineering, etc.



The Gila monster is one of two poisonous lizards found in the world. It is protected from collection in the state of Arizona, but under present habitat management, its populations are doing well.

BLM Photo

T HE STRATEGY

Consistent with the national plan, the *Arizona Fish and Wildlife 2000* implementation strategy consists of six components: Wildlife Habitat Management, Fisheries Habitat Management, Threatened/Endangered (Special Status) Species Management, Human Resources Management, Internal Coordination and Support, External Consultation (Coordination). Each component contains goals and objectives intended to provide overall guid-

ance. Specific implementation actions will be addressed in land use plans and activity plans at the district and resource area level.

To achieve all the goals and objectives will require an estimated additional 67 full time permanent positions and an estimated cost of over \$162 million. This funding must come from congressional appropriations, Challenge Cost Share, and public donations of time and money. Detailed staffing needs are addressed



Fall colors are spectacular along the San Pedro River. The San Pedro Riparian National Conservation Area was established to protect and enhance the valuable riparian resources within this Arizona ecosystem. BLM Photo

in Appendix 2. The overall costs, by component, are depicted below followed by detailed descriptions of each component. Estimated amounts to achieve the objectives for each initiative are detailed in the appendix.

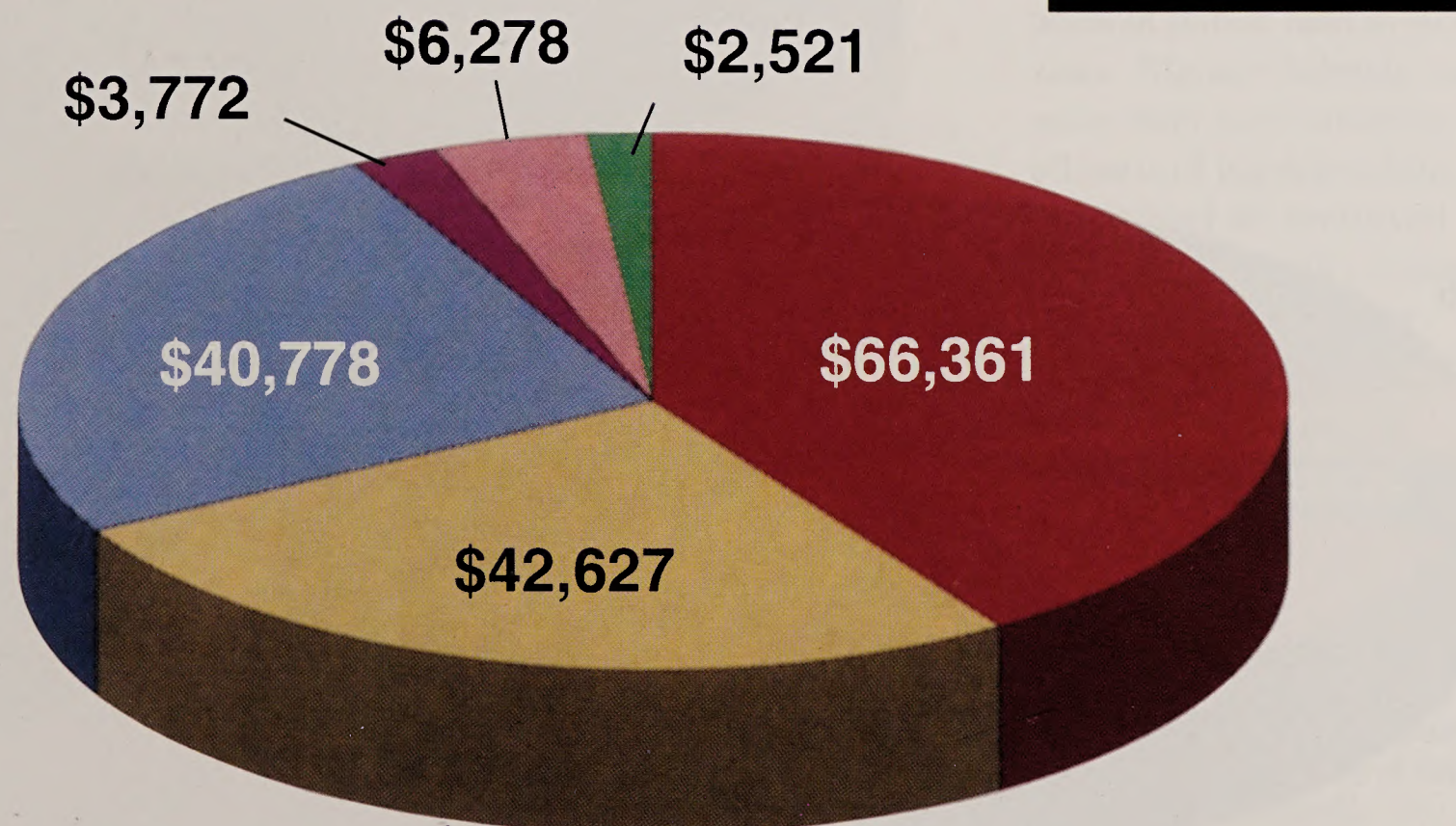
COMPONENT ONE: WILDLIFE HABITAT MANAGEMENT

Arizona has extremely diverse fish and wildlife resources, and public land contributes significantly to the diversity. Under the laws, Executive Orders and policies which direct BLM's programs, public land must continue to make that contribution.

The maintenance and restoration of the natural biological diversity on public land is a major responsibility of BLM, and a major reason for preparing this plan. All the components of this plan and the goals and objectives for each component are aimed at fulfilling this responsibility.

The Wildlife Habitat Management component of the program has broad application, covering management of the common groupings of game and nongame animals as well as specific habitats. It is broken out into those specific groups and habitats, with goals and objectives presented for each. The anticipated

ARIZONA Fish AND Wildlife 2000 COSTS
by COMPONENT (\$000s)



cost of each of the wildlife habitat initiatives in Arizona is illustrated in the chart below.

MANAGING FOR BIOLOGICAL DIVERSITY

BACKGROUND

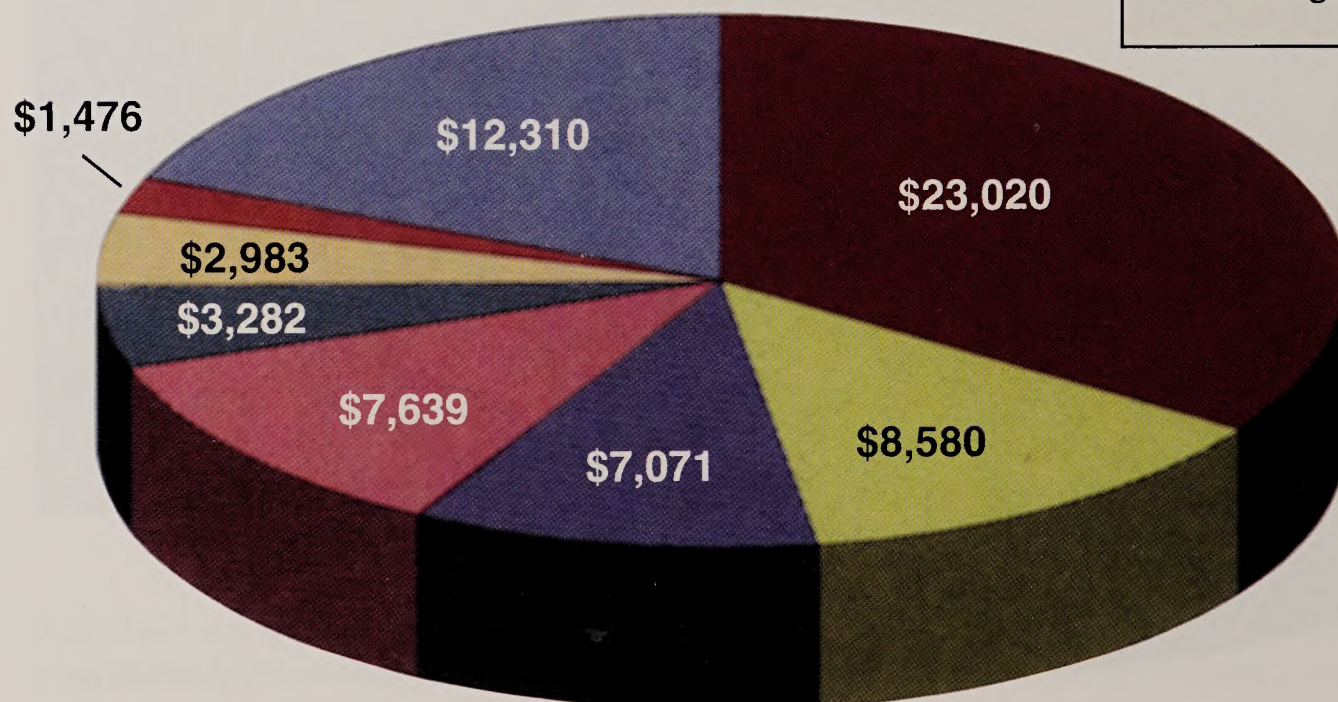
Biological diversity is the variety of life and its processes. It includes the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur. Loss of biological diversity is emerging as an international issue, one that requires the attention of any entity with the ability to impact it. Included within that group is the Bureau of Land Management in Arizona.

Arizona's geographic location between the subtropics and the Nearctic regions of North America, and its elevation and land form variety, makes it a center of biological diversity. More than 800 species of fish, amphibians, reptiles, birds, mammals and untold

numbers of invertebrate species occur in the state. Habitats form a similar diversity, allowing animals to exist in great variety. Sixteen major vegetational communities have been described, from desert scrub to tundra. Within each type is a variety of subtypes based on elevation, aspect and other factors.

Additionally, there are numerous habitats too small in total area to be included with the above areas, but which contribute to biological diversity far out of proportion to their total land area. These include the riparian habitats

- Biological Diversity
- Riparian/Wetland
- Bighorn Sheep
- Big Game
- Waterfowl
- Raptors
- Upland Game
- Nongame Birds



in cienegas, along streams, around springs and reservoirs and in ephemeral washes. Just one riparian habitat, along the San Pedro River, harbors over 350 bird species, as well as over 100 other vertebrates.

Arizona's biological diversity has already declined. Five vertebrate species that once existed in Arizona are extinct. An additional 15 or more animal species have been extirpated (lost from Arizona's fauna, but not extinct). Much wetland or riparian habitat has been lost or degraded. Some of the vertebrates can and have been reintroduced, and efforts are under way to restore degraded riparian habitats. There has, however, been an irreplaceable loss of the genetic potential present in the lost

species or populations.

While Arizona's public lands do not contain the full range of biological diversity described above, they are a major factor in it. Most of the vertebrates utilize public habitats at least seasonally or during migration. The variety of habitats excludes only the higher mountain types.

The preservation of biological diversity is essential for both ethical and aesthetic reasons. Biological diversity is the pillar on which sustainable ecosystems, economies, and society itself are built. Decline of diversity lessens our ability to carry out life sustaining functions, perhaps in broad, unnoticeable ways at first, but gaining significance as losses grow.

Biological diversity, the basis of life as we know it, is essential to all.

GOAL STATEMENT

Maintain, or if necessary, restore the natural biological diversity of fish, wildlife and plant species on 14,126,000 acres of public land in Arizona. Manage habitats on an ecosystem basis, assuring that all parts of the ecosystem on public land are preserved. Arizona BLM will continue to implement BLM policy specific to biological diversity as it develops.



The short-horned lizard is found through most of the state at mid-to high elevation reptile.
Photo by James Tallon

Objectives

1. Implement decisions from approved land use plans intended to benefit fish and wildlife resources through implementation of activity plans. Actions include 1,786,000 acres of inventory, developing 165 projects, four transplants or reintroductions, and seven research projects.
2. Develop 32 new and revise 37 existing activity plans as needed, to reflect current BLM programs and program emphases. Prepare or revise plans in cooperation with Arizona Game and Fish Department and other interested publics. Incorporate existing and new Bureauwide strategies into the revised habitat management plans to the extent needed for implementation.
3. Complete 1,171 monitoring actions. This measures progress on implementation of *Arizona Fish and Wildlife 2000*, progress in achieving fish and wildlife related land use decisions, and progress in attaining objectives of activity plans. Monitoring data will be used to evaluate management actions and decisions and make changes as needed.
4. Maximize benefits for dollars spent on managing and improving wildlife habitat on public land by continuing and expanding cooperative efforts. Accomplish through six additional Memoranda of Understanding or Cooperative Agreements with Arizona Game and Fish Department, other federal and state agencies and with private groups or landowners.
5. Secure access to public land with fish and wildlife resources of significant value by obtaining 48 easements or land acquisitions, and by continuing to participate on the Landowner/Lessee/Sportsman Committee of the Arizona Game and Fish Commission.



The elusive coati mundi, a relative of the raccoon, is unique to the Southwest. Observing one in the wild would be a highlight of any nature watchers' trip to Arizona. BLM Photo

BIGHORN SHEEP HABITAT MANAGEMENT

BACKGROUND

Bighorn sheep have been part of Arizona for at least as long as man has been present. Depictions of bighorns are present in many

prehistoric rock art features, indicating the importance of the species to early man.

While it's not known how many bighorn sheep existed in Arizona prior to the arrival of the white man, it is known that at about that time, their numbers began a decline which continued until recently. Many small populations disappeared entirely, and others were severely reduced in both numbers and range. This decline came about because of unrestricted hunting, disease and habitat loss. Early attempts to stop the decline through harvest restrictions failed, and populations continued to disappear even in the 1950s.

Only after intensive management began did populations begin to increase. Decisions to remove livestock from bighorn habitat, to carry out transplants, and to construct and maintain water catchments and potholes led to increased numbers and wider distribution.

Arizona BLM participated in these efforts, transplanting over 250 desert bighorns onto public lands, and developing or improving over 100 water holes, with close attention to livestock management. These efforts, if continued, assure the continued presence of the desert bighorn in Arizona.

In 1979, the Rocky Mountain bighorn was introduced in southeast Arizona. Populations have expanded both in range and numbers, giving Arizona two species of bighorn sheep. This herd of Rocky Mountain bighorns is secure enough to support a limited hunting season.

Public land is very important to the preservation of the desert bighorn. Approximately 30 percent of their habitat in the state is on public land, supporting about 22 percent of the total number of sheep.

Recognizing the importance of the desert



Desert bighorn sheep numbers have been increasing due to the combined efforts of BLM, Arizona Game and Fish, Arizona Desert Bighorn Sheep Society, and other cooperators. Photos by Bob Miles

Javelina are among the 10 species of big game found on Arizona public land. Photo courtesy of Arizona Game and Fish Department.



bighorn and in response to public support for its preservation, the Bureau of Land Management in 1987 developed a rangewide plan to assure its recovery and continued well being on public land in the west.

Arizona BLM identified 20 habitat areas that either already supported viable bighorn sheep populations (80-120 animals) or held remnant populations and could support larger populations. The Gila Box currently has no sheep but is identified as having the potential to support 200 animals.

To implement that plan, BLM emphasized the Challenge Cost Share program, building on existing relationships with its cooperators in bighorn sheep management, the Arizona Game and Fish Department and the Arizona Desert Bighorn Sheep Society. Cooperatively, the three entities have continued to aggressively manage desert bighorn sheep habitat and populations on public land.

Implementation of the plan is far from complete. Eleven populations are still below viable numbers, and many acres of potential habitat are still unoccupied or far below potential. Continued management effort is needed if the bighorn sheep is to fulfill its potential in Arizona.

GOAL STATEMENT

Maintain or improve desert bighorn sheep and Rocky Mountain bighorn sheep habitats on public land to either sustain the viable populations now present in 8 areas or to allow populations to increase to viable levels in 13 areas.

OBJECTIVES

1. Through the activity plan process, continue implementation of BLM's strategic plan for bighorn sheep. Actions needed are: 300,000 acres of inventory, 142 new projects, and 211 projects maintained.
2. Measure progress toward achieving bighorn sheep objectives through 60 monitoring actions.
3. Cooperate with various partners in managing bighorn sheep, through 15 transplants or reintroductions, 12 easements or acquisitions, and five Memoranda of Understanding or Cooperative Agreements.

OTHER BIG GAME HABITAT MANAGEMENT

BACKGROUND

In addition to bighorn sheep, Arizona's public land supports mule deer, white-tailed deer, pronghorn, elk, javelina, mountain lion, and wild turkey. The majority of public land is habitat for one or more big game species.

Deer, antelope and javelina are the most frequently observed of Arizona's big game.

Deer and javelina are the most frequently hunted big game animals in Arizona. From an economic standpoint, their welfare is important to Arizona. From a total habitat standpoint, elk, wild turkey, bear, bison and mountain lions are relatively unimportant on public land. However, each is locally important, for varying reasons.

GOAL STATEMENT

Implement BLM's strategic plan for big game to ensure big game species such as mule deer, white-tailed deer, javelina, pronghorn, and wild turkey on public land are provided habitat of sufficient quantity and quality to sustain identifiable economic and social contributions to Arizona.

OBJECTIVES

1. Develop objectives and planned actions to benefit big game in 81 activity plans.

2. Inventory 351,000 acres, construct 184 new projects, and maintain 275 projects.
3. Measure progress toward achieving big game objectives through 18 monitoring actions.
4. Cooperate with various partners in managing big game, through five transplants or reintroductions, one easement, and 10 Memoranda of Understanding or Cooperative Agreements.



BLM has traditionally focused on big game habitat. Although management focus is changing, big game is still an important part of the picture. Photo by George Andrejko

THE STRATEGY

Of the four native quail species found in Arizona, Gambel quail is the most commonly occurring species. It can be found in all four BLM districts. Photo by George Andrejko

UPLAND GAME HABITAT MANAGEMENT

BACKGROUND

For the purposes of this strategy, upland game includes cottontail rabbits, tree squirrels, upland game birds (quail and chukars) and migratory game birds (pigeons and doves). Virtually all vegetation types contain some of these species at some time during the year.

The relative abundance and availability of upland game species makes them popular with the consumptive and nonconsumptive user. Generally, small game hunters outnumber big game hunters.

The primary factor governing abundance of upland game in Arizona is quantity and quality of habitats. This strategy emphasizes maintenance, improvement and monitoring of habitats.

GOAL STATEMENT

Provide habitat on public land to ensure that upland game species are provided habitat of sufficient quantity and quality to sustain identifiable economic and social contributions to Arizona.



OBJECTIVES

1. Inventory 70,000 acres, construct 138 new projects, and maintain 150 projects.
2. Measure progress toward achieving upland game objectives through 15 monitoring actions.
3. Cooperate with various partners in managing upland game, through four transplants or reintroductions, one easement, and four Memoranda of Understanding or Cooperative Agreements.

WATERFOWL HABITAT MANAGEMENT

BACKGROUND

The Bureau of Land Management is an active partner in the implementation of the North American Waterfowl Management Plan, through its own waterfowl habitat management plan. While Arizona's public land is typically desert in nature, BLM does have a role in waterfowl management. Riparian areas and wetlands provide migratory stopover areas, and in some instances along the lower Colorado River, essential wintering habitat. Nesting habitat is provided along many of the streams and smaller rivers.

Managing for waterfowl habitat not only meets BLM's commitment to help increase waterfowl numbers in North America, but helps achieve other Fish and Wildlife 2000 objectives, specifically for nongame migratory birds, riparian/wetland habitat improvement, and in some cases, native fisheries.

GOAL STATEMENT

Help perpetuate a diversity and abundance of waterfowl for Arizona and the nation by managing public land wetlands and other habitats that are of importance to waterfowl. Several significant waterfowl areas in Arizona are identified in BLM's Waterfowl Habitat Management Plan On Public Lands.

OBJECTIVES

1. Develop objectives and planned actions to benefit four waterfowl activity plans.
2. Inventory 16,000 acres, construct 34 new projects, and maintain 23 projects.
3. Measure progress toward achieving waterfowl objectives through 29 monitoring actions.
4. Cooperate with various partners in the managing of waterfowl habitat, through six easements or acquisitions, and five Memoranda of Understanding or Cooperative Agreements.



Black-bellied whistling-ducks have increased in recent years and are now the most likely whistling-duck to be seen in Arizona.
Photo by James Tallon

RAPTOR HABITAT MANAGEMENT

BACKGROUND

There is considerable interest in the management of raptors, otherwise known as birds of prey. Being at the top of food chains makes them useful as indicators of environmental health. This also makes them sensitive to environmental degradation.

There have been 42 species of raptors, documented in Arizona. Of this total, 13 are special status species and are addressed in that section. Maintaining healthy populations of remaining species offers more management options for maintenance or improvement of their well-being. This benefits the birds and other resource users.

GOAL STATEMENT

Provide suitable habitat conditions for raptors on public land through the conservation and management of essential habitat components, including habitat for prey species. BLM's raptor management plan will form the basis for this effort.

1. Inventory 97,000 acres and construct 14 new projects.

2. Measure progress toward achieving raptor objectives through 197 monitoring actions.
3. Cooperate with various partners in managing raptors through two transplants or reintroductions and six Memoranda of Understanding or Cooperative Agreements.

OBJECTIVES

1. Develop objectives and planned actions for 27 key raptor areas in 12 activity plans.
2. Inventory 97,000 acres and construct 14 new projects.
3. Measure progress toward achieving raptor objectives through 197 monitoring actions.



In contrast to most other owls, the short-eared owl is active during the daytime. BLM Photo

4. Cooperate with various partners in managing raptors through two transplants or reintroductions and six Memoranda of Understanding or Cooperative Agreements.

NONGAME BIRD HABITAT MANAGEMENT

BACKGROUND

BLM recently completed a strategic plan titled, *Nongame Migratory Bird Habitat Conservation Plan*. It addresses a growing concern for declining nongame bird populations, particularly neotropical migrants.

Arizona hosts approximately 365 nongame, nonraptorial birds. Approximately 150 of these birds are neotropical migrants. These birds migrate from or through the tropics on their way to seasonal habitats in North America. Approximately 150 of these species are known to utilize public land in Arizona. Many of them are not found outside of Arizona.

Declines of neotropical migrants have been documented in the Eastern United States but not enough data is available to determine population trends in the West. Arizona is ideally situated to monitor these trends. Besides hosting several unique species, many migrants pass through Arizona on their way north and south of the Mexico border.

Neotropical migrants such as the northern oriole breed in North America and winter south of the border. Photo by George Andrejko

GOAL STATEMENT

Restore, maintain, and enhance populations of nongame birds through habitat management actions. Ensure adequate quantity and quality of habitat for 240 neotropical migratory bird species. Achieve this through implementation of the *Nongame Migratory Bird Habitat Conservation Plan*.

OBJECTIVES

1. Develop objectives and planned actions to improve nongame bird habitat in 26 new activity plans and 36 revised activity plans.





Land exchanges allowed BLM to acquire prime riparian habitat such as the Empire-Cienega Ranch above. BLM Photo

2. Inventory 966,000 acres of habitat, construct 63 new projects, and maintain 21 projects.
3. Measure progress toward achieving nongame bird habitat objectives through 563 monitoring actions.
4. Cooperate with various partners in managing of nongame bird habitat through nine research projects, seven easements or acquisitions, and 11 Memoranda of Understanding or Cooperative Agreements.

THE STRATEGY

WETLAND/RIPARIAN HABITAT MANAGEMENT

BACKGROUND

A riparian area is land directly influenced by permanent water.

Riparian areas have vegetation or physical characteristics reflective of permanent water influence. Lake shores and stream banks are typical riparian areas. Public land surrounding riparian zones in Arizona are generally arid and semiarid rangelands where water is a critical limiting factor. As a result, many uses of public lands are often concentrated in riparian areas, such as recreation, grazing, and wildlife habitat.

Riparian areas comprise 42,930 acres of Arizona public land scattered across the state in association with 1,408 miles of permanent and intermittent streams, springs and meadows. While riparian sites make up only a small percentage of the public land base, they possess a great diversity of biological resource values and management potential.

BLM has made significant progress in managing riparian areas on Arizona's public land. Perhaps the most significant accomplishment has been in the acquisition of over 100 miles of prime riparian habitat along the San Pedro River, Cienega, Aravaipa and Hot Springs Canyon creeks.

Arizona BLM has two congressionally designated Riparian National Conservation Areas: the San Pedro and Gila Box. Many partners have contributed time and funding to enhance these areas by planting vegetation,

constructing fences, and collecting trash. Acquisition of instream flow rights is also a priority. However, many riparian systems function below optimum levels.

In 1990, an interdisciplinary team prepared the *Arizona Riparian-Wetland Area Management Strategy*. This blueprint describes how Arizona BLM will care for its riparian-wetland resources. Implementation will restore perennial stream flows and improve water quality, aesthetics, recreational opportunities, fish and wildlife habitat, and flood control.

GOAL STATEMENT

In concert with other BLM programs, implement the Arizona Riparian-Wetland Area Management Strategy so that 75 percent of these areas on public land function properly by 1997.

OBJECTIVE

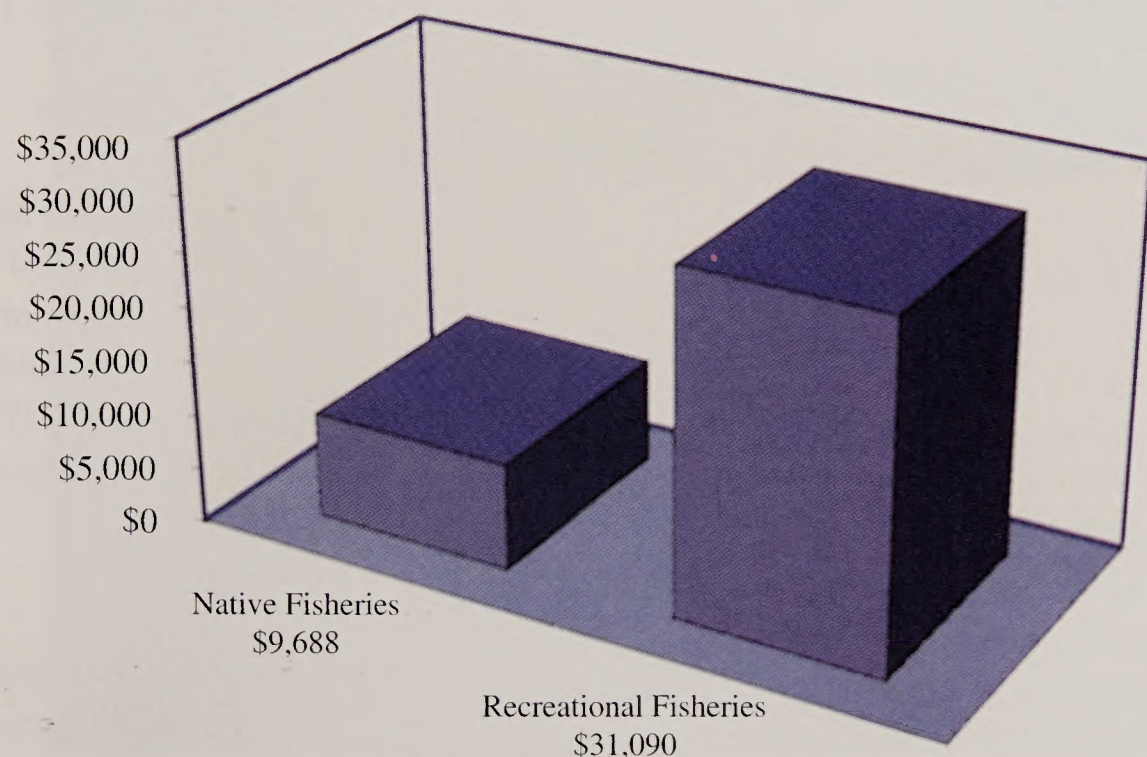
1. Develop objectives and planned actions to improve wetland/riparian habitat in 43 new activity plans and eight revised activity plans.

2. Inventory 31,000 acres and 1,916 miles of wetland/riparian habitat and construct 191 new projects.
3. Measure progress toward achieving wetland/riparian objectives through 116 monitoring actions.
4. Cooperate with various partners in managing wetland/riparian habitat through 37 easements or acquisitions and three Memoranda of Understanding or Cooperative Agreements.

COMPONENT TWO FISH HABITAT MANAGEMENT

Arizona's arid environment offers interesting opportunities for managing fish habitat on public land. There are no cold water fisheries on public lands, and what warmwater fisheries exist, other than in the Colorado River, are confined to occasional small reservoirs and

The Two Major Programs in Arizona under the Fisheries Component With Their Implementation Costs



The Gila chub will benefit through initiatives such as "Bring Back the Natives" and the Special Status Fishes Habitat Management Plan.
Photo by Jeff Simms



short stretches of the Gila River. BLM's role in fishery management on the Colorado River is growing as more emphasis is placed on recreational fishing.

There is considerable opportunity for the restoration of native fish on public land. There is also an opportunity to expand recreational fisheries on public land where no conflict exists with native fish.

This component addresses all fish species on public land. The native fish goal includes those species of fish that could be listed as special status species.

The two major programs in Arizona under the fisheries component are illustrated on page 25 along with their implementation costs.

The three saltwater species only occur during the rare instances when the Colorado River flows all the way to the Gulf of California. All are reduced in range and numbers. For those reasons, this goal represents the special status fish section.

Arizona Public land supports some of the best remaining habitats for native fish species. Aravaipa Creek contains the most diverse assemblage of native fish. Other important habitats include the San Pedro, Virgin and Gila Rivers and Bonita, Burro and Cienega Creeks.

NATIVE FISH HABITAT MANAGEMENT

BACKGROUND

A wide array of fish are native to Arizona, including saltwater species. The majority of native fish species in Arizona are imperiled, some more so than others. One species, the Monkey Springs pupfish, is extinct. Several species exist only outside Arizona, and others are present only because they have been reintroduced.

GOAL STATEMENT

Manage aquatic habitats on public land to provide for the well being or recovery of those native fish found, or formerly found, in aquatic habitat now on public land. Achieve this by implementing the BLM's *Special Status Fishes Habitat Management Plan*.

OBJECTIVES

1. Develop objectives and planned actions to benefit native fish in 46 activity plans.

2. Inventory 254,000 acres, construct 70 new projects, and maintain 33 projects.
3. Measure progress toward achieving native fisheries objectives through 280 monitoring actions.
4. Cooperate with various partners in managing native fishes through 108 transplants or reintroductions, 31 easements or acquisitions, and seven Memoranda of Understanding or Cooperative Agreements.

RECREATIONAL FISHERIES HABITAT MANAGEMENT

BACKGROUND

Most of the recreational fisheries program on public land in Arizona is managed by the Yuma District along the lower Colorado River. What was once a great warmwater fishery has declined due to a loss of underwater feeding and hiding habitats.

The two state wildlife agencies, Bureau of Reclamation, fishing clubs and corporate partners have teamed up to initiate a plan for the benefit of the fishery contained in Lake Havasu.

Recreational fishing is popular on many of Arizona's lakes. Photo by George Andrejko

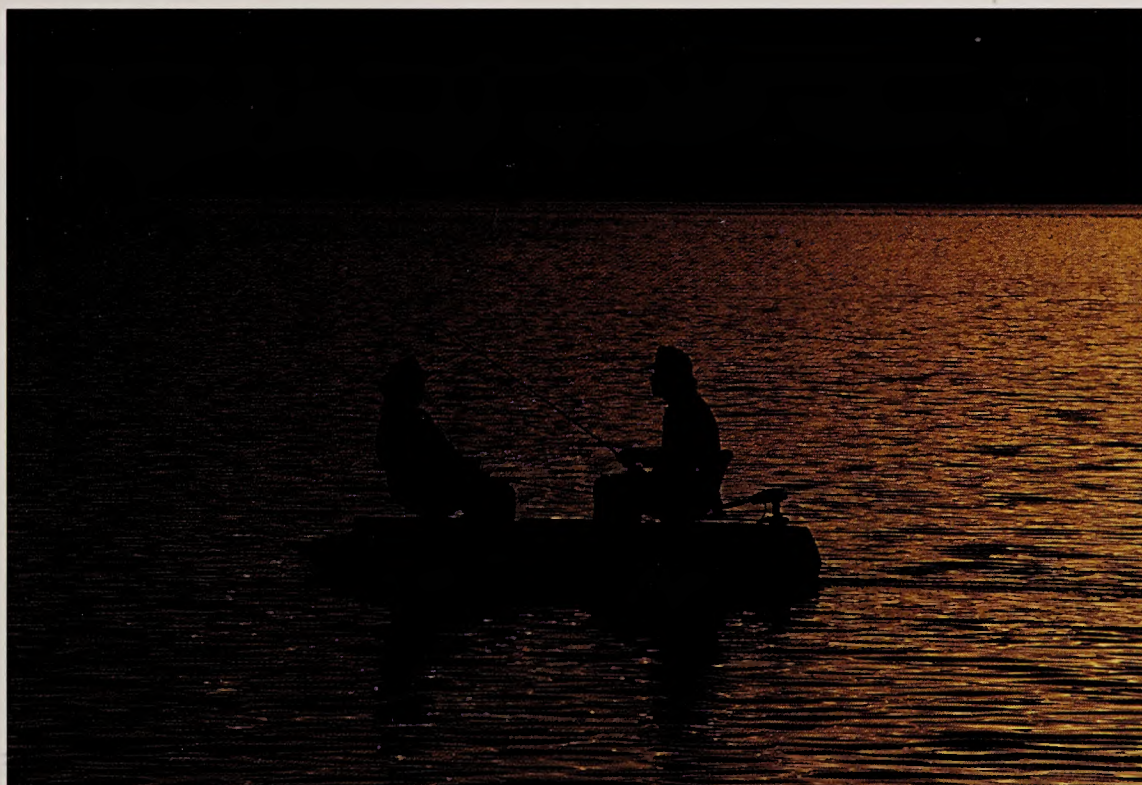
In 1992 the Lake Havasu Fisheries Improvement Program began. The major emphasis is on habitat enhancement and public access. There are also ongoing programs to enhance fishing opportunities along the river above and below Lake Havasu. The tremendous amount of year-round recreational use in this area makes it a perfect place to showcase a major fisheries program to satisfy fishing demand.

GOAL

Provide habitat for recreational fisheries opportunities on public land wherever they will not conflict with native fish populations. Implement the BLM's "Resident Fish Habitat Management Plan."

OBJECTIVES

1. Develop objectives and planned actions to benefit resident fish in one new activity plan and two revised activity plans.
2. Inventory 20,000 acres, construct 37 new projects, and maintain 19 projects.



3. Measure progress toward achieving resident fish objectives through 72 monitoring actions.
4. Cooperate with various partners in managing resident fish through four Memoranda of Understanding or Cooperative Agreements.

SPECIAL STATUS SPECIES MANAGEMENT

Arizona contains a wide variety of habitats. Most are quite fragile because of the desert climate. All have been adversely impacted to one degree or another over the last 150 years. Many animal and plant species that are adapted to these habitats have declined in numbers and distribution as the habitats have been impacted. Within Arizona, approximately 49 species are listed by the U.S. Fish and Wildlife Service as threatened or endangered, as well as approximately 194 species that are candidates for listing. Arizona Game and Fish has listed more than 100 species on the Threatened

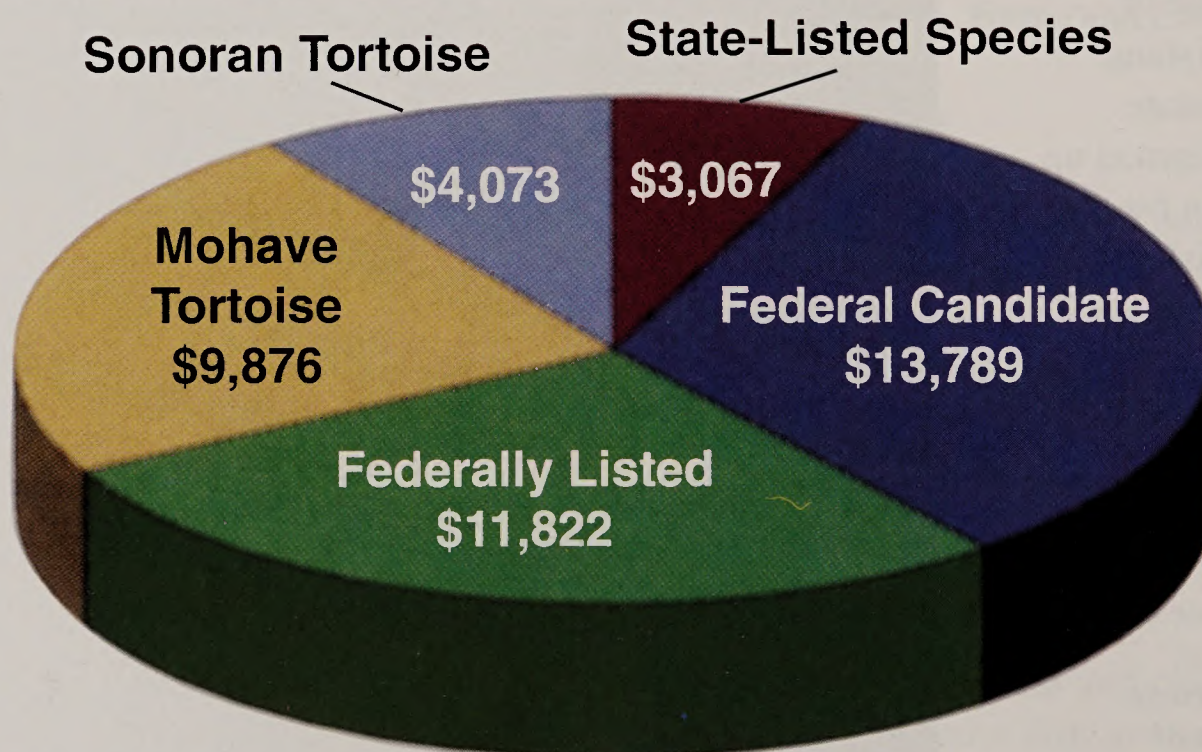
Native Wildlife List. While these lists overlap to a degree, there is a considerable number of species in need of special attention.

BLM has two major responsibilities under the Endangered Species Act of 1973: aid the recovery of listed species on public land and assure that actions it funds, carries out, or authorizes are not likely to jeopardize the continued existence of listed species or result in destruction or adverse modification of critical habitat.

Through policy, BLM has extended a similar degree of protection to candidate species and state-listed species. This minimizes, to the extent possible, the need to list additional species under the Endangered Species Act. Management geared to keeping species off the list gives BLM greater flexibility in the overall management of public land.

The five major special status species programs are illustrated below along with their anticipated costs.

Five Major Special Status Species Programs With Their Anticipated Costs



FEDERALLY LISTED SPECIES HABITAT MANAGEMENT

BACKGROUND

This discussion pertains to all federally listed species on Arizona's public land, with the exception of the desert tortoise.

As discussed in the Managing for Biological Diversity section, Arizona has a wide variety of habitats harboring an even wider variety of plant and animal species. Some of those habitats have been lost or degraded as a result of human occupancy and use.

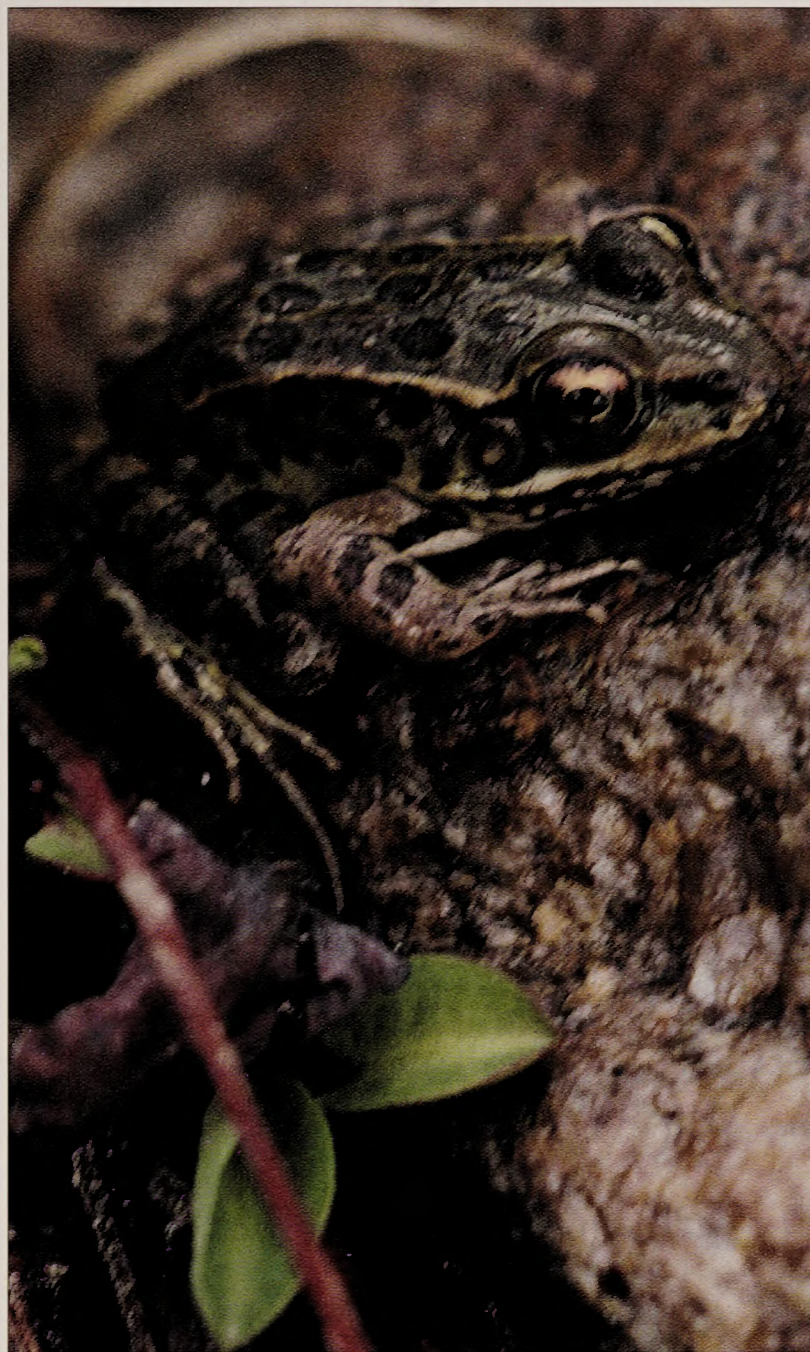
Significant adverse impacts to numerous plant and animal species found in the state, have caused concern for their survival. As a result, these species have been listed as threatened or endangered under the Endangered Species Act of 1973, as amended.

The U.S. Fish and Wildlife Service has listed 49 plant and animal species as threatened or endangered in Arizona. While not all of these species use or occur on public land, many are important considerations in managing public land.

The Endangered Species Act requires the Bureau of Land Management to assure its actions don't jeopardize the continued existence of any listed species. BLM must also assist in the recovery of listed species on public land in Arizona. Every action the BLM authorizes, funds or carries out must be assessed to determine if it will affect a listed species.

In addition, BLM must use its programs to promote recovery of listed species, helping bring them to the point where they no longer need Endangered Species Act protection.

It is to the public's advantage to assure



An ecosystem approach to habitat management should prevent the need to federally list species such as the lowland leopard frog. Photo by Jeff Howland

federal actions do not adversely affect listed species and to aggressively manage for their recovery. The full productive potential of the public land can only be attained under true multiple-use, sustained yield management. Such management may not be attainable when dealing with listed species or their habitat.

The federally listed population of the desert

tortoise is a major issue in management of public land in Arizona. There is a great deal of interest in its welfare. For that reason, a separate table and objectives are included specific to the projected needs for the desert tortoise under this goal.

GOAL STATEMENT

Improve habitat conditions for threatened or endangered plants and animals on public land by improving the ecosystems on which they depend, bringing listed species to a point that allows removal from the list. Consistent with land use plans, and in consultation with U.S. Fish and Wildlife Service and Arizona Game and Fish Department, restore listed species and populations to historic ranges on public land.

OBJECTIVES

1. Develop objectives and planned actions to benefit federally listed species in 70 new activity plans and 16 revised activity plans.
2. Inventory 2,411,000 acres, construct 104 new projects, and maintain 56 projects.
3. Measure progress toward achieving federally listed species objectives through 1,033 monitoring actions.
4. Cooperate with various partners in

managing federally listed species through 35 transplants or reintroductions, five easements or acquisitions, and 20 Memoranda of Understanding or Cooperative Agreements.

FEDERALLY LISTED DESERT TORTOISE

BACKGROUND

The Mohave Desert population of the desert tortoise was listed as a threatened species in 1990. It is found in Arizona north and west of the Colorado River, in the Arizona Strip and Yuma districts. The majority of desert tortoise habitat is on public land.

The reasons for the desert tortoise's decline are mostly speculative due to a lack of base line and long-term monitoring data. The creature is difficult to study and assess because of its rugged habitat, long life span, and the fact that it spends a lot of time underground. BLM works with other agencies to obtain the

The endangered Peeble's Navajo cactus, found near Holbrook, is no larger than the diameter of a dime when mature.
BLM Photo



data needed to determine habitat management prescriptions that will assist in recovery of the species.

OBJECTIVES

1. Inventory 136,000 acres, construct eight new projects, and maintain five projects.
2. Measure progress toward achieving listed desert tortoise population objectives through 18 monitoring actions.
3. Cooperate with various partners in managing federally listed desert tortoise populations through one transplant.

CANDIDATE SPECIES HABITAT MANAGEMENT

BACKGROUND

This discussion pertains to all federal candidate plant and animal species on Arizona's public land, except for the desert tortoise.

The habitat losses and alterations that caused 49 species to be listed as threatened or endangered also impact many other plant and animal species. These species, while not as severely affected as those already listed, are subjects of concern. They have, or appear to have, declined in numbers or distribution, causing them to be candidates for listing. Approximately 194 plant and animal species in Arizona are candidates. They range from tiny snails found only on a single rocky slope to widespread species such as the chuckwalla. In some cases, the species are experiencing difficulty in other parts of its range but is considered a candidate in Arizona because the impacts may spread, or the species is migratory.

Much is known about some candidate spe-

The Mohave desert tortoise population is found north and west of the Colorado River. The Sonoran population resides south and east of the Colorado River. The desert tortoise feeds mostly on annual and perennial grasses and wildflowers.
BLM Photo





The federally listed Hualapai Mexican vole occurs primarily on public land. Photo by George Andrejko

cies, but others are candidates because of the lack of knowledge on their abundance or distribution. They may be known from only a few sites, or they may have been observed only a few times. In other instances, existing data indicate the species should receive the protection provided by listing as threatened or endangered. For most, the U.S. Fish and Wildlife Service is seeking information to ascertain whether listing is appropriate.

Candidate species do not receive the protection of the Endangered Species Act, but BLM has internal policies to assure they are managed in a manner to prevent the need to place them on the endangered species list. This policy, and an aggressive candidate species management program, is very much in the public's interest. The cost of preventing the need to list species is generally less than the cost of managing to recover those same species if they become listed. In some cases, additional inventory provides information indicating the species is not in need of listing; in others, active management can mitigate threats to the species. In addition, such management helps assure the maintenance of biological diversity, a major goal of this plan.

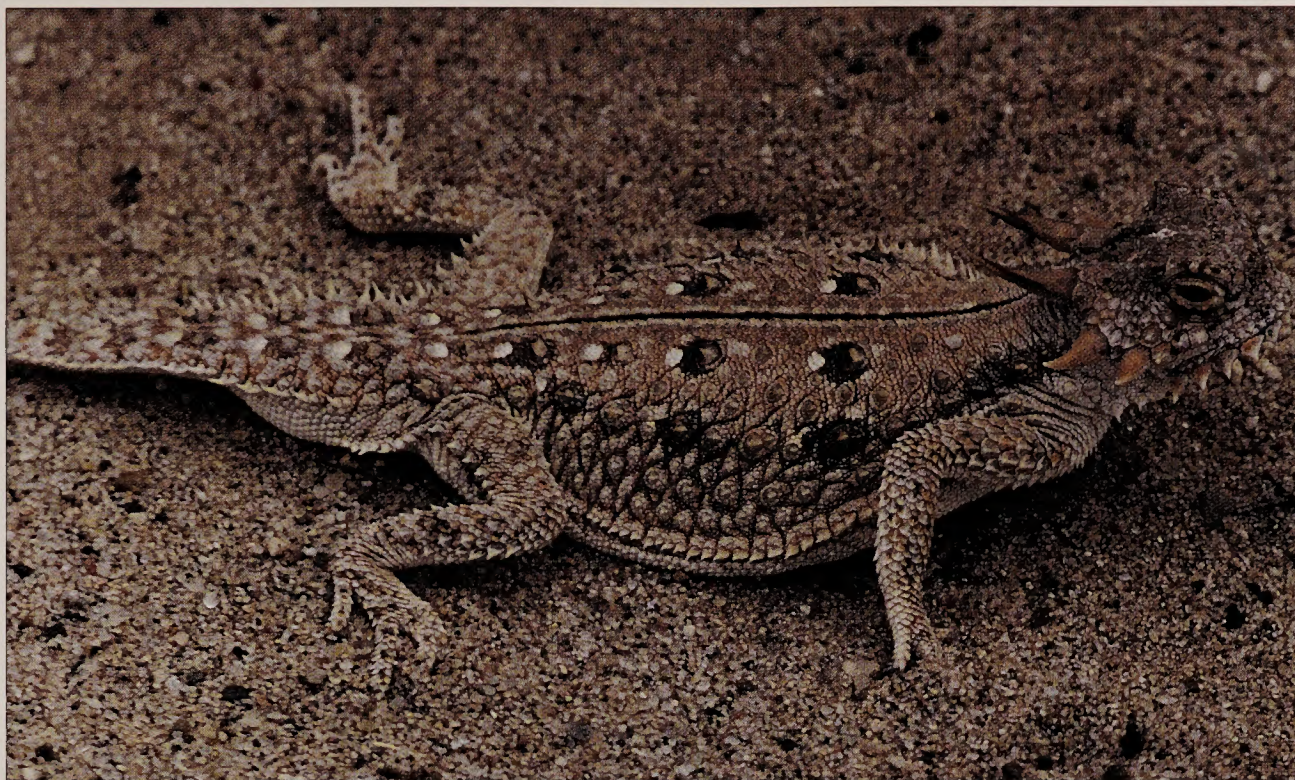
Management of the candidate Sonoran Desert population of the desert tortoise is a major program in Arizona. For that reason, it is addressed specifically with separate objectives and a table under this goal.

GOAL STATEMENT

Manage the habitat of candidate species in a manner that will avoid endangering the species and/or the need to list the species by either the Arizona Game and Fish Department or the U.S. Fish and Wildlife Service.

OBJECTIVES

1. Develop objectives and planned actions to benefit federal candidate species in nine new activity plans and three revised activity plans.
2. Inventory 5,268,000 acres, construct 111 new projects, and maintain 21 projects.
3. Measure progress toward achieving federal candidate species objectives through 1,216 monitoring actions.



The candidate flat-tailed horned lizard is really not a horned toad. In southwestern Arizona it is found in very limited areas near windblown sand.
Photo by Jeff Howland

4. Cooperate with various partners in managing of federal candidate species through 54 transplants or reintroductions, one easement, and 10 Memoranda of Understanding or Cooperative Agreements.

CANDIDATE SONORAN DESERT TORTOISE

BACKGROUND

The Sonoran Desert population of desert tortoise is found south and east of the Colorado River. The species primarily resides in the rocky slopes and bajadas of scrub and shrub covered desert foothills and mountains, between 500 and 4500 feet elevation. The majority of this habitat is public land administered by the Phoenix, Yuma and Safford BLM districts.

In 1991, the U.S. Fish and Wildlife Service determined that listing the Sonoran Desert population of the desert tortoise was not warranted. Data provided by BLM was a major factor in that decision.

Speculation on the decline of the Sonoran

desert tortoise was due to a lack of base line and long-term monitoring data. The creature is difficult to study and assess because of its rugged habitat, long life span, and the fact it spends a lot of time underground.

BLM is working with other agencies to obtain additional data to determine proper habitat management prescriptions that will assist in keeping the species off the federal list.

OBJECTIVES

1. Develop objectives and planned actions to benefit the Sonoran desert tortoise in five activity plans.
2. Inventory 3,620,000 acres, construct 35 new projects, and maintain two projects.
3. Measure progress toward achieving Sonoran desert tortoise population objectives through 128 monitoring actions.
4. Cooperate with partners in managing Sonoran desert tortoise population through one transplant, 20 easements or acquisitions and nine Memoranda of Understanding or Cooperative Agreements.

STATE-LISTED SPECIES HABITAT MANAGEMENT

BACKGROUND

Arizona Game and Fish Department published *Threatened Native Wildlife in Arizona* in 1988. It lists 111 species or subspecies of fish, amphibians, reptiles, birds and mammals. California and New Mexico have similar lists. In general, the listed animals occur in small populations greatly reduced from historic levels, usually as a result of a reduction in their habitats. The purpose of the list is to inform land managers what species to emphasize in habitat management.

GOAL STATEMENT

Manage habitats of state-listed species in Arizona, California and New Mexico in a manner that assists in recovering these species to the point where they can be removed from the lists.

OBJECTIVES

1. Develop objectives and planned actions to benefit state-listed species in six new activity plans and two revised activity plans.

2. Inventory 468,000 acres, construct 35 new projects, and maintain 11 projects.
3. Measure progress toward achieving desert tortoise population objectives through 94 monitoring actions.
4. Cooperate with the states and various partners in managing state-listed species through 13 transplants and 10 Memoranda of Understanding or Cooperative Agreements.



San Pedro Riparian National Conservation Area supports the largest breeding population of gray hawks in the United States. BLM Photo



The threat to chuckwalla is not due to habitat loss, but rather to harmful collecting practices. Photo by Bob Miles

HUMAN RESOURCE MANAGEMENT

BACKGROUND

Arizona BLM has a highly motivated and competent professional wildlife staff, guided by concerned and able managers. It is incumbent upon both biologists and managers to assure that this situation continues. There are several avenues that must be followed to assure this.

BLM as a whole must maintain an organizational environment that motivates people to

give their personal best toward managing the public's fish and wildlife resources. The key to this is communication; BLM people must talk to one another. This can be accomplished through two way evaluation, workshops, and informal networking.

Training must be made a priority so both biologists and managers can maintain technical and professional expertise to support BLM's mission, goals, and objectives as they relate to the Fish and Wildlife Program. Participation in professional societies must be facilitated to encourage the personal and professional growth of both wildlife staff members and managers.

Staffing must continually be assessed to assure work loads do not exceed capability, or destroy motivation and morale. Staff skills must be appropriate for the job.

The continued addition of species to the federal and state lists of special status species indicates that additional management attention must be directed to these resources. To do this efficiently, it will be necessary to acquire additional staff and specific skills within Arizona BLM. These skills are especially needed in the botany and fisheries management areas, and require additional staff in these areas. It may not be necessary for each district to acquire these staff skills; inter-district skills swaps or inter-district assignments can be used to provide needed skills in some districts.

Table 4 displays the results of a preliminary analysis of skills and numbers of people in those skills needed to implement this plan. This list will be adjusted as experience requires.

This represents an increase of 46 positions in the Fish and Wildlife Program. The number is

large, but the program as depicted in this document is ambitious. This number is necessary if there is to be any possibility of implementing all of the actions needed to fulfill this plan.

In 1987, BLM conducted a study of present and former biologists to examine career development and enhancement and job enriching opportunities. The study resulted in recommendations on a variety of items related to improvement of the job situation for BLM's wildlife program staff.

Arizona BLM will assist in implementing these recommendations to the extent feasible, with the intention of increasing the sense of fulfillment and productivity of its existing wildlife program staff and fully developing new staff members' abilities.

Goal

Provide the opportunities and assist employees in managing their careers and realizing their potential.

Objectives

1. Maintain the appropriate skills, staffing, and experience to meet legal and environmental needs and mandates.
2. Provide and maintain a dual career ladder to retain highly qualified employees and ensure quality BLM mission accomplishment.
3. Maintain and enhance professional expertise.
4. Encourage and prepare highly qualified people to seek entry level line and staff management positions.
5. Ensure each employee has meaningful and challenging work and works in an environment that promotes productivity and job satisfaction.
6. Improve employee morale by recognizing excellence.

Table 4. Estimated Staffing Needs to Implement Arizona Fish and Wildlife 2000

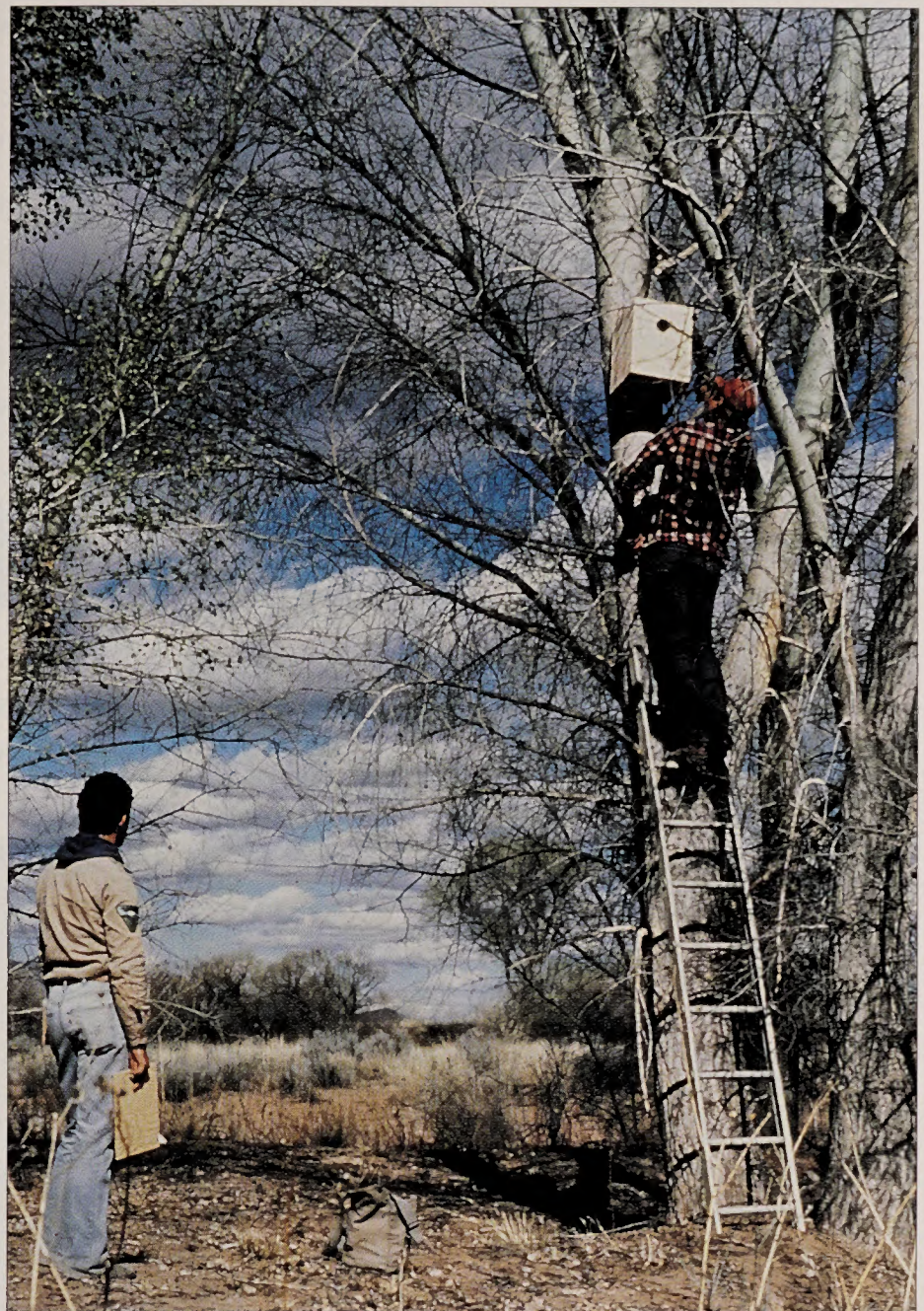
	Resource Area	District	State	Total
# of Offices	9	4	1	
Wildlife	29	6	4	40
Fisheries	3	2	1	5
Botanist	4	2	1	7
Other*	23	11	5	39
Total	59	21	11	91

*Includes such skills as statisticians, public affairs, clerical, personnel, procurement, engineering, and law enforcement.

Wildlife biologists enhance wildlife habitat through a variety of methods. Here, biologists install nesting structures for birds in a cottonwood tree. BLM Photo

Table 5. Estimated Costs (\$000s) to Achieve the Human Resource Management Goal and Objectives

Year	Amount
1	\$111
2	396
3	420
4	714
5-9	4637
Total	\$6,278



INTERNAL COORDINATION AND SUPPORT

BLM works under a congressional mandate to manage the public land and its resources under the principles of multiple-use and sustained yield. In order to do this, the knowledge, skills and abilities of a variety of resource specialists are needed, along with a number of management levels and support functions. Resource development and management activities often can be designed to accomplish the goals or objectives of more than one program, and in any event, they must be carried out in the manner least impacting to other resources. Thus, it is to the mutual

benefit of BLM programs to assure strong cooperative efforts.

GOAL STATEMENT

Increase the total value of multiple uses of public land and sustain viable fish and wildlife populations by maintaining or improving habitat through full consideration of the resources represented in other BLM resource programs.

OBJECTIVES

1. Assist BLM managers in fulfilling their responsibilities and duties concerning

fish and wildlife and their habitats in carrying out the various resource management programs and actions on public land.

2. Assist other BLM resource specialists in fulfilling the agency's multiple-use/sustained yield mission by providing appropriate and necessary information for their planned activities and actions, and seek similar assistance for fish or wildlife related activities.
3. Ensure that BLM Fish and Wildlife Program personnel are aware of the agency's total mission and work to assure that the same is true for all other staff specialists.

4. Increase program efficiency by implementing the Wildlife and Fisheries Information System and using technological advances such as Geographical Information Systems to enhance data storage, retrieval or use.

EXTERNAL COORDINATION

Fish and wildlife habitat management, as practiced by BLM, is a three-step process of

Table 6. Estimated Costs (\$000s) to Achieve the Internal Coordination and Support Goal and Objectives

Year	Amount
1	\$55
2	158
3	168
4	285
5-9	1855
Total	\$2521



The Yuma District participates in several outreach programs to promote recreational fishing. Photo by Jeanette Davis

fact-finding, planning, and action. None of these steps can be effective without the cooperation of others. BLM must depend on the public, private organizations, other state and federal agencies and scientists from colleges and universities to contribute detailed knowledge and skills to its resource management efforts. Meaningful cooperative relationships with other agencies and organizations are essential.

GOAL 1 - OUTREACH PROGRAMS

BACKGROUND

Maintaining positive working relationships with agencies and groups outside of BLM creates additional opportunities for public involvement which fosters awareness, support, assistance and participation in cooperative programs that enhance fish and wildlife habitats.

Increased support and cooperation will increase BLM's effectiveness, enhance BLM's image as a resource manager, and improve staff morale. This, in turn, results in greater understanding, support, and pride in BLM programs by internal and external publics.

GOAL

Demonstrate that BLM has the expertise and capability, and is effectively managing wildlife and fish habitats in a multiple-use/sustained yield context.

OBJECTIVES

1. Carry out an outreach program at all levels to inform various publics of BLM's programs and activities, through active public affairs programs at each office level.



BLM Force account crews assist wildlife biologists through engineering and construction of wildlife projects such as wildlife waters and pipelines.
Photo by Diane Drobka

2. Carry out an environmental education program by cooperating with the various educational institutions in the state, providing information, speakers and other requested items.
3. Work with Arizona Game and Fish Department, U.S. Forest Service, Defenders of Wildlife and other cooperators to develop a Watchable Wildlife Program.

GOAL 2 - COOPERATION WITH OTHER AGENCIES

BACKGROUND

As indicated in an earlier section, BLM's Fish and Wildlife Program has an extensive history of cooperation with the Arizona Game and Fish Department and other groups and agencies. This section's purpose is to add emphasis to that long history and to help assure it continues uninterrupted. While some BLM activities can be carried out unilaterally, almost all are enhanced by a cooperative effort, helping all to achieve their objectives.

GOAL

Enhance BLM cooperative relationships with other federal and state agencies through frequent consultation and coordination. Recognize state management of resident wildlife and fish species through enhancement of existing state/federal partnership for species/habitat management.

OBJECTIVES

1. Develop or update Memoranda of Understanding with other agencies as needed to assure that cooperative procedures are effective and as streamlined as possible.
2. Meet formally at least annually at appropriate levels of cooperating agencies to assure continued cooperative relationships. Encourage staff-to-staff discussion.
3. Participate in other agencies' meetings when that participation will improve understanding and communication.

GOAL 3 - COOPERATION WITH PUBLIC LAND USER GROUPS

BACKGROUND

BLM works with a wide variety of groups on a regular basis, including such diverse entities as the Arizona Cattlemen's Association,

Havasu Bassmaster's, the Arizona Wool Producer's Association, Dixie Wildlife Federation, Arizona Desert Bighorn Sheep Society, Arizona Desert Racing Association, and many others too numerous to name. The contributions of these and many other groups have greatly improved habitat for wildlife and fish. The intent of



Employees receive training on aquatic habitat evaluation along Burro Creek. BLM Photo

this goal is to assure that these and future groups can continue to contribute.

Goal

Enhance BLM's ability to manage habitat on public land through the development of partnerships and other cooperative efforts with the many public land user groups.

Objectives

1. Cooperate in a constructive manner with the various public land user groups from both the conservation community and the commodity production community, improving understanding of respective management concerns and strengthening cooperation on field programs.
2. Develop Memoranda of Understandings or cooperative agreements with public land user groups wherever they will complement or assist in meeting mutual land or habitat management goals and objectives.
3. Encourage nonfederal investment in public land habitat management activities.

4. Assure that the contributions of the many cooperating groups are recognized as being significant to the management of public land.

Table 7. Estimated Costs (\$000s) to Achieve the External Coordination Goal and Objectives

Year	1	2	3	4	5-9	Total
Amt.	\$72	237	252	428	2783	\$3772

Students learn how they can improve the environment by assisting with habitat enhancement projects. For Earth Day '92, Tucson school children planted more than 400 grass plants and 70 cottonwood trees along a small stream. Photo by Diane Drobka





IMPLEMENTATION

As stated in the introductory paragraphs, this document is part of the BLM's policy tier. As such, it is not an action plan but rather, a strategy which provides guidance on what and how actions will be carried out. It will be implemented through the various Resource Management Plans and the activity plans they prescribe.

Successful accomplishment of the goals and objectives contained in this strategy are dependent on not only BLM support but the support of all affected and interested parties concerned with managing the wildlife program in Arizona. Congressional support through the appropriation process is a requisite of the future success of this program.



(Above) Collared lizards feed on anything smaller than they are, killing their prey with powerful jaws.
Photo by James Tallon

(Left) BLM strives to provide food, water and cover for all wildlife on public land including these pronghorn antelope.
Photo by Kerry Baldwin

R

EAIALIZED BENEFITS

Implementation of this plan will assure Arizona's public land wildlife habitats are maintained and improved. Habitats in good to excellent ecological condition provide many benefits, including optimum numbers and diversity of wildlife. By providing the needed habitat components, wildlife can better withstand the rigors of nature over which man has little control, such as drought, floods, harsh winters and disease.

Economically, the consumptive and nonconsumptive use of wildlife generates large amounts of revenue.

In 1990 a study was completed titled, *Estimates Of The Use Of Bureau of Land Management Lands For Hunting*. According to this study, an estimated seven million hours annually are spent by people hunting in Arizona on BLM land. Of this total, 3.3 million hours were spent hunting big game on public land. Deer and elk hunting, alone, resulted in an estimated net value of nearly \$13 million.

A similar study, *Estimates Of Nonconsumptive Wildlife Use On Forest Service And BLM Lands* was completed in 1988. It found the net annual value of trips with the primary purpose of observing wildlife on public lands ranged between \$6 and \$9 million. Clearly, from an economic standpoint, the cost of implementing this plan will result in a continuing net return.

Maintaining healthy habitats and optimum abundance and diversity of wildlife has a high intrinsic value. The American public places



Everything from nongame to entire ecosystems will benefit from implementation of Arizona Fish and Wildlife 2000. BLM Photo

great importance on conserving their wildlife heritage. Perhaps the greatest example of this desire is the Endangered Species Act. This plan emphasizes the need to protect those species that are listed pursuant to the Act and work to delist them. Also, an important aspect is to manage for biological diversity to avoid having to list future species. This ecosystem approach to managing habitats has its practical side also. Healthy and diverse habitats provide maximum flexibility to manage the other resources on public land.

Finally, *Arizona Fish and Wildlife 2000* provides clear direction for the future. It sets goals and objectives, details funding needs, and is useful as an outreach tool. Successful implementation will place BLM and its partners on the road together as we begin the 21st century.

Appendix 1 - Existing and proposed habitat management plans in Arizona

District/Plan Name	Year Completed	Current Status	Percent Implemented
Arizona Strip District			
Black Rock	1976	NR	100
Clayhole	1979	NR	98
Mt. Trumbull	1977	NR	100
Parashant	1982	CU	60
Paria-Kanab Creek	1983	CU	67
Virgin River-Pakoon Basin	1983	CU	43
Phoenix District			
Aquarius	1983	NR	81
Bill Williams/Crossman Peak*	1983	NR	44
Black Canyon	1983	CU	54
Black Mountains	1981	CU	92
Cerbat-Music	1983	CU	25
Hualapai	1987	CU	21
Lower Gila North*	1983	NR	67
Lower Gila South*	1990	CU	5
Mescal-Dripping Springs*	1983	NR	56
Middle Gila	1981	CU	61
Peebles Navajo Cactus	1985	CU	55
Barry M. Goldwater*		P	
Safford District			
Dos Cabezas	1983	NR	58
Gila-Peloncilla	1981	NR	66
Mescal-Dripping Springs*	1983	NR	56
Nichol's Turk's Head Cactus	1985	CU	38
Silverbell-Baboquivari	1980	NR	99
Empire-Cienega		P	
San Pedro		P	
Yuma District			
Bill Williams/Crossman Peak*	1983	NR	44
Buckskin Mountain/Cactus Plain	1985	CU	47
Ehrenberg-Cibola	1983	NR	39
Laguna-Martinez	1987	CU	45
Lake Havasu	1982	NR	28
Topock North	1979	NR	89
Lower Gila North*	1983	NR	67
Lower Gila South*	1990	CU	5
Barry M. Goldwater*		P	

NR=Needs Revision CU=Current Up To Date P=Proposed for Preparation

*Plan areas overlap district boundaries.

Appendix 2 - Estimated Costs (\$000s) and Units of Accomplishment to Achieve the Biological Diversity Goal and Objectives

Workload Measure	Year 1		Year 2		Year 3		Year 4		Years 5-9		Totals	
	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost
Inventory (000s) acres	6	40	104	233	310	355	210	504	1156	2518	1786	3650
Monitoring # Plans	14	100	71	541	81	451	93	791	912	6711	1171	8594
Projects # Developed			11	327	5	150	17	525	132	3948	165	4950
Plans # Prepared	3	70	2	53	5	103			22	525	32	751
Plans # Revised	2	40	2	52	5	157	9	160	19	454	37	863
Transplants/Reintroductions			2	15			1	66	1	71	4	152
Research			1	134	0	6	2	105	4	1856	7	2101
Easements/Acquisitions			3	110	7	187	5	150	33	1388	48	1835
MOUs/Co-op Agreements	0	29	2	8			1	17	3	70	6	124
Total Costs		\$279,000		\$1,473,000		\$1,409,000		\$2,318,000		\$7,541,000		\$23,020,000

Appendix 3 - Estimated Costs (\$000s) and Units of Accomplishment to Achieve the Bighorn Sheep Goals and Objectives

Workload Measure	Year 1		Year 2		Year 3		Year 4		Years 5-9		Totals	
	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost
Inventory (000s) acres	1	4	19	40	40	84	44	69	197	463	300	656
Monitoring # Plans	12	146	4	52	4	58	6	63	45	677	60	854
Projects # Developed	24	132	8	165	13	269	14	310	95	1894	142	2784
Projects # Maintained	2	4	11	129	16	143	15	159	145	1658	211	2221
Transplants/Reintroductions			2	17	1	25	2	67	8	160	15	273
Easements/Acquisitions			1	6	2	51			9	94	12	151
MOUs/Co-op Agreements			2	12			1	49	2	71	5	132
Total Costs		\$286,000		\$421,000		\$630,000		\$717,000		\$5,017,000		\$7,071,000

Appendix 4 - Estimated Costs (\$000s) and Units of Accomplishment to Achieve the Other Big Game Goals and Objectives												
Workload Measure	Year 1		Year 2		Year 3		Year 4		Years 5-9		Totals	
	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost
Inventory (000s) acres			22	11	46	59	39	24	244	129	351	223
Monitoring # Plans			2	14	1	19	1	24	14	176	18	233
Projects # Developed	1	71	11	294	11	274	16	438	145	3616	184	4693
Projects # Maintained	27	50	16	66	27	103	25	108	180	792	275	1119
Plans # Prepared	0	3	5	60	3	4	4	57	69	812	81	936
Transplants/Reintroductions			2	13			1	25	2	136	5	174
Easements/Acquisitions					1	26					1	26
MOUs/Co-op Agreements			2	15	2	45	2	50	4	125	10	235
Total Costs		\$124,000		\$473,000		\$530,000		\$726,000		\$5,786,000		\$7,639,000

Appendix 5 - Estimated Costs (\$000s) and Units of Accomplishment to Achieve the Upland Game Goals and Objectives												
Workload Measure	Year 1		Year 2		Year 3		Year 4		Years 5-9		Totals	
	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost
Inventory (000s) acres			5	13	3	11	3	11	59	165	70	200
Monitoring # Plans			2	8	1	6	1	11	11	89	15	114
Projects # Developed			9	36	2	18	16	54	111	446	138	554
Projects # Maintained			10	31	2	18	16	54	122	366	150	469
Transplants/Reintroductions			1	4					3	59	4	63
Easements/Acquisitions					1	22					1	22
MOUs/Co-op Agreements			1	3			1	9	2	42	4	54
Total Costs				\$95,000		\$75,000		\$139,000		\$1,167,000		\$1,476,000

Appendix 6 - Estimated Costs (\$000s) and Units of Accomplishment to Achieve the Waterfowl Goal and Objectives												
Workload Measure	Year 1		Year 2		Year 3		Year 4		Years 5-9		Totals	
	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost
Inventory (000s) acres			2	12	2	12	1	11	11	152	16	187
Monitoring # Plans			3	10	1	6	1	11	24	124	29	151
Projects # Developed			2	162	4	109	7	368	21	1714	34	2353
Projects # Maintained			2	24	1	20	3	54	16	257	23	355
Plans # Prepared			1	2					3	27	4	29
Easements/ Acquisitions			1	17			1	98	4	47	6	162
MOUs/Co-op Agreements			1	3	2	22	2	20			5	45
Total Costs				\$230,000		\$169,000		\$562,000		\$2,321,000		\$3,282,000

Appendix 7 - Estimated Costs (\$000s) and Units of Accomplishment to Achieve the Raptor Goal and Objectives												
Workload Measure	Year 1		Year 2		Year 3		Year 4		Years 5-9		Totals	
	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost
Inventory (000s) acres	24	40	5	79	5	198	6	197	57	795	97	1309
Monitoring # Plans	2	46	12	58	19	84	21	85	143	727	197	1000
Projects # Developed			2	22			1	32	11	263	14	317
Plans # Prepared			1	6	2	12	1	4	8	71	12	93
Transplants/ Reintroductions			0	12	0	16	1	20	1	137	2	185
MOUs/Co-op Agreements			1	5	1	8	2	19	2	30	6	62
Total Costs		\$86,000		\$182,000		\$318,000		\$365,000		\$2,032,000		\$2,983,000

Appendix 8 - Estimated Costs (\$000s) and Units of Accomplishment to Achieve the Nongame Bird Goal and Objectives

Workload Measure	Year 1		Year 2		Year 3		Year 4		Years 5-9		Totals	
	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost
Inventory (000s) acres	16	154	100	200	200	400	250	500	400	895	966	
Monitoring # Plans			21	100	42	200	50	285	450	2164	563	
Projects # Developed			5	150	4	125	9	260	45	1023	63	
Projects # Maintained			2	50	3	75	5	172	11	339	21	
Plans # Prepared			6	200	6	210	3	125	11	240	26	
Plans # Revised			7	100	6	90	8	115	15	215	36	
Research			1	50	4	1585	1	65	3	240	9	
Easements/ Acquisitions			0	135	2	500	0	13	5	1110	7	
MOUs/Co-op Agreements			1	15			1	20	9	190	11	
Total Costs		\$154,000		\$1,000,000		\$3,185,000		\$1,555,000		\$6,416,000		\$12,310,000

Appendix 9 - Estimated Costs (\$000s) and Units of Accomplishment to Achieve the Wetland/Riparian Goal and Objectives

Workload Measure	Year 1		Year 2		Year 3		Year 4		Years 5-9		Totals	
	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost
Inventory (000s) acres	8	220	4	79	4	183	3	191	12	821	31	1494
Number of miles	251		100		386		314		865		1916	
Monitoring # Plans	10	79	8	67	10	115	17	96	71	827	116	1184
Projects # Developed	5	40	12	242	16	274	18	369	140	2968	191	3893
Plans # Prepared	1	10	3	13	5	22	5	37	29	119	43	201
Plans # Revised	1	10	1	3	2	15	1	13	3	21	8	62
Easements/ Acquisitions			3	20	5	50	4	44	25	220	37	334
MOUs/Co-op Agreements			0	2	2	14	1	13			3	29
Total Costs		\$369,000		\$511,000		\$803,000		\$906,000		\$5,991,000		\$8,580,000

* Both acres of wetlands and miles of streams are reported in this goal.

Appendix 10 - Estimated Costs (\$000s) and Units of Accomplishment to Achieve the Native Fish Goal and Objectives

Workload Measure	Year 1		Year 2		Year 3		Year 4		Years 5-9		Totals	
	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost
Inventory (000s) acres	2	44	16	24	71	76	70	55	95	257	254	456
Monitoring # Plans	8	12	17	33	16	39	24	49	215	403	280	536
Projects # Developed	3	20	4	57	8	120	5	94	50	693	70	984
Projects # Maintained			3	23	2	10	4	35	24	277	33	345
Plans # Prepared	1	5	3	19	5	30	4	29	33	243	46	326
Transplants/ Reintroductions			6	31	15	52	17	65	70	345	108	493
Easements/ Acquisitions			2	391	6	1070	4	933	19	4036	31	6430
MOUs/Co-op Agreements	1	5	1	5	1	25			4	83	7	118
Total Costs	\$86,000		\$583,000		\$1,422,000		\$1,260,000		\$6,337,000		\$9,688,000	

Appendix 11 - Estimated Costs (\$000s) and Units of Accomplishment to Achieve the Recreational Fisheries Goal and Objectives

Workload Measure	Year 1		Year 2		Year 3		Year 4		Years 5-9		Totals	
	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost
Inventory (000s) acres	1	10	1	9			3	19	15	93	20	131
Monitoring # Plans	2	10	4	14	2	22	7	19	57	176	72	241
Projects # Developed	3	31	2	1344	4	4814	5	5955	23	15300	37	27444
Projects # Maintained	2	10	1	11			2	8	14	3160	19	3189
Plans # Prepared	1	10									1	10
Plans # Revised			1	2					1	23	2	25
MOUs/Co-op Agreements			0	3	1	10	1	9	2	28	4	50
Total Costs	\$71,000		\$1,383,000		\$4,846,000		\$6,010,000		\$18,780,000		\$31,090,000	

Appendix 12 - Estimated Costs (\$000s) and Units of Accomplishment to Achieve the Federally Listed Species Goals and Objectives Excluding the Mohave Desert Tortoise												
Workload Measure	Year 1		Year 2		Year 3		Year 4		Years 5-9		Totals	
	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost
Inventory (000s) acres	300	112	133		100	144	158	199	1720	2343	2411	2977
Monitoring # Plans	14	85	65		59	114	97	212	798	1841	1033	2399
Projects # Developed	2	65	7		7	417	12	294	76	1938	104	2880
Projects # Maintained	3	33	4		4	24	5	33	40	248	56	359
Plans # Prepared	1	32	5		10	62	12	94	42	421	70	650
Plans # Revised	1	6	1		1	12	2	17	11	146	16	193
Transplants/Reintroductions			2		10	20	3	17	20	466	35	536
Recovery Plan Implementation	11	66	9		11	79	10	68	104	789	145	1062
Easements/Acquisitions			1		1	50	1	306	2	45	5	448
MOUs/Co-op Agreements			1		1	14	2	32	16	251	20	318
Total Costs		\$399,000		\$727,000		\$936,000		\$1,272,000		\$8,488,000		\$11,822,000

Appendix 13 - Estimated Costs (\$000s) and Units of Accomplishment to Achieve the Objectives for the Federally Listed Mohave Desert Tortoise Population												
Workload Measure	Year 1		Year 2		Year 3		Year 4		Years 5-9		Totals	
	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost
Inventory (000s) acres	6	21	8	34	15	72	13	57	94	403	136	587
Monitoring # Plans	1	110	1	33	2	72	2	48	12	408	18	671
Projects # Developed			1	4			1	13	6	33	8	50
Projects # Maintained			1	3					4	47	5	50
Transplants/Reintroductions									1	15	1	15
Recovery Plan Implementation	1	162	1	164	1	200	1	200	5	1974	9	2700
Total Costs		\$293,000		\$238,000		\$344,000		\$318,000		\$2,880,000		\$4,073,000

Appendix 14 - Estimated Costs (\$000s) and Units of Accomplishment to Achieve the Candidate Species Goals and Objectives

Workload Measure	Year 1		Year 2		Year 3		Year 4		Years 5-9		Totals	
	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost
Inventory (000s) acres	300	150	311	505	705	717	745	863	3207	5978	5268	8213
Monitoring # Plans	29	53	73	128	119	234	127	233	868	1490	1216	2138
Projects # Developed	8	46	6	118	3	23	10	64	84	1488	111	1739
Projects # Maintained			1	30					20	473	21	503
Plans # Prepared			1	8	1	5	2	17	5	86	9	116
Plans # Revised			1	1					2	21	3	22
Transplants/Reintroductions			4	52	2	21	3	52	45	707	54	832
Easements/Acquisitions			1	65							1	65
MOUs/Co-op Agreements			1	10	1	12	1	11	7	128	10	161
Total Costs	\$249,000		\$917,000		\$1,012,000		\$1,240,000		\$10,371,000		\$13,789,000	

Appendix 15 - Estimated Costs (\$000s) and Units of Accomplishment to Achieve the Sonoran Desert Tortoise Goals and Objectives

Workload Measure	Year 1		Year 2		Year 3		Year 4		Years 5-9		Totals	
	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost
Inventory (000s) acres	1578	175	128	10	1014	251	879	38	28	56	3627	530
Monitoring # Plans	1	90	8	147	27	299	21	230	71	1790	128	2556
Projects # Developed			2	62	2	53	3	57	28	851	35	1023
Projects # Maintained			1	1					1	19	2	20
Plans # Prepared			1	3	2	30	2	19			5	52
Transplants/Reintroductions									1	5	1	5
Easements/Acquisitions			2	274	2	1648	4	998	12	2046	20	4966
MOUs/Co-op Agreements			1	46	1	47	1	85	6	546	9	724
Total Costs	\$265,000		\$543,000		\$2,328,000		\$1,427,000		\$5,313,000		\$9,876,000	

Appendix 16 - Estimated Costs (\$000s) and Units of Accomplishment to Achieve the State-Listed Species Goals and Objectives												
Workload Measure	Year 1		Year 2		Year 3		Year 4		Years 5-9		Totals	
	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost	Unit	Cost
Inventory (000s) acres			31	83	61	194	88	227	288	797	468	1301
Monitoring # Plans			6	18	2	30	10	53	76	160	94	261
Projects # Developed			3	38	1	37	3	51	28	478	35	604
Projects # Maintained			1	13	1	21	1	20	8	155	11	209
Plans # Prepared			1	5					5	73	6	78
Plans # Revised			1	5					1	69	2	74
Transplants/Reintroductions			1	27	1	14	1	20	10	371	13	432
MOUs/Co-op Agreements			1	7			1	6	8	95	10	108
Total Costs				\$196,000		\$296,000		\$377,000		\$2,198,000		\$3,067,000

Appendix 17 - Overall Estimated Costs (\$000s) to Implement <i>Arizona Fish and Wildlife 2000</i> by Component and Initiative						
Initiative	Year 1	Year 2	Year 3	Year 4	Years 5-9	Totals
WILDLIFE HABITAT MANAGEMENT						
Biological Diversity	279	1473	1409	2318	17541	23020
Bighorn Sheep						
Big Game	124	473	530	726	5786	7639
Upland Game						
Waterfowl		230	169	562	2321	3282
Raptors						
Nongame Birds	154	1000	3185	1555	6416	12310
Riparian/Wetland						
FISHERIES HABITAT MANAGEMENT						
Native Fish	86	583	1422	1260	6337	9688
Recreational Fisheries						
SPECIAL STATUS SPECIES MANAGEMENT						
Federally Listed	399	727	936	1272	8488	11822
Threatened Tortoise						
Federal Candidate	249	917	1012	1240	10371	13789
Candidate Tortoise						
State-Listed		196	296	377	2198	3067
HUMAN RESOURCES MANAGEMENT						
	11	396	420	714	4637	6278
INTERNAL COORDINATION AND SUPPORT						
	55	158	168	285	1855	2521
EXTERNAL COORDINATION						
	72	237	252	428	2783	3773
TOTAL	2,899	9,763	19,143	20,619	109,913	\$162,337

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